GUYANA

NATIONAL BIODIVERSITY ACTION PLAN II

(2007 - 2011)

Environmental Protection Agency of Guyana
May 2007

b

GUYANA

NATIONAL BIODIVERSITY ACTION PLAN II

A CONTINUED PROGRAMME FOR ACTION BY STAKEHOLDERS
TOWARDS THE CONSERVATION
AND SUSTAINABLE USE OF BIODIVERSITY

Approved by the Cabinet of the Government of Guyana
August 2008

Funded by World Wide Fund for Nature

Environmental Protection Agency
Georgetown

May 2007

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

ACKNOWLEDGEMENTS

The Environmental Protection Agency (EPA), as the National Focal Point for the Convention on Biological Diversity (CBD), coordinated the activities for the development of the Action Plan. The process involved significant support and contributions of staff of the EPA.

Ms. Parmeshwarie Pitamber (Senior Environmental Officer) played a vital role in the overall supervision and coordination of activities leading to the development of the Plan. Staff of the Natural Resources Management Division provided critical administrative support and logistics for the consultation processes. Ms. Chuvika Harilal, as Technical Assistant to the project, gave both technical and administrative support throughout the process. The Administrative Director; (Ms. Dhanrajie Madray) and staff of the Administrative Division also played very direct and indirect roles in the execution of activities under the project.

Mention must be given to the special Technical Committee that provided technical advice, guidance and inputs towards the completion of a draft NBAP II. The Committee comprised Dr. Patrick Chesney, Dr. Patrick Williams, Dr. Paulette Bynoe, Mr. Ramesh Lilwah, and the four Consultants.

Additionally, the individual participants who contributed at the workshops, meetings, and media programmes must be acknowledged for their inputs and recommendations which were incorporated into the document. Special thanks must be given to the indigenous representatives.

Mr. Patrick Williams, Programme Officer of the WWF Guyana Country Office, provided the much needed technical and advisory support.

The Director of the Natural Resources Management Division, Dr. Indarjit Ramdass, gave overall guidance and immeasurable technical support throughout the process. He also edited and formatted the final document, as well as the accompanying four Situation Analysis Reports.

Funding was provided by the World Wide Fund for Nature (WWF) through the Guyana Country Office.

THE PROCESS INVOLVED IN THE DEVELOPMENT OF THE PLAN

Several stages of consultations led to the development of this National Biodiversity Action Plan II. Following the review of Guyana's first NBAP (1999-2004) and the recommendations, a thematic approach was used in the preparation of NBAP II. Four thematic areas of the Convention on Biological Diversity (CBD) that are relevant and significant to Guyana were used - Forestry Biodiversity, Agriculture Biodiversity, Marine and Inland Waters Biodiversity; and Coastal Biodiversity. Situation Analyses were prepared for each of the thematic areas, after which stakeholders were consulted at a National Stakeholder Workshop. This workshop provided opportunities for stakeholders to raise issues relevant to the Situation Analyses, and to provide inputs for the refinement of the documents.

The final Situation Analyses were used to guide the preparation of the NBAP II document. A second stakeholder workshop was held to allow stakeholders to provide comments and inputs into the draft document. At this workshop, a special Technical Committee of experts was established to assist in the finalization of the document.

The development of NBAP II followed the participatory process of stakeholder consultations and involvement. Representatives of indigenous communities from each region of Guyana were present at the National Stakeholder Workshop, and all relevant Sector Agencies, Government and Non-Governmental Organizations, and civic and private groups were fully involved in the consultations.

The Situation Analyses and NBAP II were prepared by a team of four Consultants, led by Mr. Shyam Nokta.

The Consultancy Team comprised the following:

Mr. Shyam Nokta (Team Leader)	Agriculture Biodiversity
Mr. Gary Clarke	Forest Biodiversity
Mr. Reuben Charles	Marine and Inland Water Resources Biodiversity
Mr. Phillip DaSilva	Coastal Biodiversity.

ACRONYMS AND ABBREVIATIONS

ABS	Access and Benefit-sharing
ACTO	Amazon Cooperation Treaty Organisation
AMCAR	Amazon Caribbean Limited
ASSP	Agriculture Support Services Programme
ATICC	Agriculture In-Services Training and Communication Centre
BDS	Biodiversity Specialist
BPOA	Barbados Plan of Action
CARDI	Caribbean Agriculture Research Development Institute
CBD/UNCBD	United Nations Convention on Biological Diversity
CDB	Caribbean Development Bank
CI	Conservation International
CI-G	Conservation International - Guyana
CIDA	Canadian International Development Agency
CITES	Convention on International Trade in Endangered Species of Wild Fauna and Flora
CIFOR	Centre for International Forestry Research
COP	Conference of the Parties (to the CBD)
CoP	Code of Practice
CPACC	Caribbean Planning for Adaptation to Climate Change
CREP	Caribbean Regional Environment Programme
CRFM	Caribbean Regional Fishers Mechanism
CEP	Caribbean Environment Programme
DFID	Department for International Development
DoF	Department of Fisheries
EEZ	Exclusive Economic Zoning
EIA	Environmental Impact Assessment
EPA	Environmental Protection Agency
EU	European Union
FAC	Fisheries Advisory Committee
FAO	Food and Agriculture Organisation
FFI	Fauna and Flora International
FLEGT	Forest Law Enforcement, Governance and Trade
FMD	Foot and Mouth Disease
FMP	Fisheries Management Plan
FSC	Forest Stewardship Council
FTCI	Forestry Training Centre Inc.
FZ	Fishery Zone
GATOSP	Guyana Association of Trawler Owners and Seafood Processors
GDP	Gross Domestic Product
GEA	Guyana Energy Agency
GEF	Global Environment Facility
GINRIS	Guyana Integrated National Resources Information System
GIS	Geographic Information System
GISP	Global Invasion Species Programme
GFC	Guyana Forestry Commission
GLSC	Guyana Lands and Surveys Commission
GMO	Genetically Modified Organisms
GMTCS	Guyana Marine Turtle Conservation Society
GNIFC	Guyana National Initiative for Forest Certification
GGMC	Guyana Geology and Mines Commission
GoG	Government of Guyana
GPAS	Guyana Protected Areas System
GSA	Guyana School of Agriculture
GURT	Genetic Use of Restriction Technologies
GuySuCo	Guyana Sugar Corporation

GRDB	Guyana Rice Development Board
IEC	Integrated Information Communication
ICZM	Integrated Coastal Zone Management
ICCAT	International Committee for the Conservation of Atlantic Tunas
IDB/IADB	Inter-American Development Bank
IUCN	World Conservation Union
IICA	Inter-American Institute for Cooperation on Agriculture
IPPC	International Plant Protection Convention
IPM	Integrated Pest Management
IPOA	International Plan of Action
IMCAM	Integrated Marine and Coastal Area Management
IMO	International Maritime Organisation
ITTO	International Tropical Timber Organisation
KfW	Kreditanstalt für Wiederaufbau
LAN-NPPAW	Latin American Network for Technical Cooperation in National Parks, Protected Areas and Wildlife
MACC	Mainstreaming Adaptation for Climate Change
MDG	Millennium Development Goal
MMA/ADA	Mahaica-Mahaicony-Abary Agriculture Development Authority
MoA	Ministry of Agriculture
MoU	Memorandum of Understanding
NARI	National Agricultural Research Institute
NBAC	National Biodiversity Advisory Committee
NBAP	National Biodiversity Action Plan
NBC	National Biodiversity Committee
NBF	National Biodiversity Framework
NBRIS	National Biodiversity Research Information System
NCSA	National Capacity Self Assessment
NCC	National Climate Committee
NDS	National Development Strategy
NEAP	National Environmental Action Plan
NFP	National Forest Plan
NRMD	Natural Resources Management Division
NGO	Non-Governmental Organization
NMMAP	National Mangrove Management Action Plan
NPC	National Parks Commission
NPAS	National Protected Areas System
NTFP	Non-timber Forest Product
NRDDB	North Rupununi District Development Board
NREAC	National Resources and Environment Advisory Committee
OIE	Organisation of Epizootics
PRCSSP	Poor Rural Community Support Services Project
PRSP	Guyana's Poverty Reduction Strategy Plan
REA	Rapid Ecological Assessment
RIL	Reduced Impact Logging
SAP	Strategy and Action Plan
SBSTTA	Subsidiary Body on Scientific, Technical and Technological Advice
SFEP	State Forest Exploratory Permit
SFP	State Forest Permission
SIDS	Small Island Developing States
SPR	Species Protection Regulations
SRCS	South Rupununi Conservation Society
SRDD	Sea and River Defence Division
TAC	Treaty for Amazonian Cooperation
TED	Turtles Excluders Devices
TGP	Tropenbos-Guyana Programme
ToR	Terms of Reference
TSA	Timber Sales Agreement
UG	University of Guyana

UNCED	United Nations Conference on Environment and Development
UNCBD	United Nations Convention on Biological Diversity
UNCCD	United National Convention to Combat Desertification
UNFCCC	United Nations Framework Convention on Climate Change
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
USAID	United States Agency for International Development
UK	United Kingdom
WCL	Wood Cutting Lease
WECAFC	Western Central Atlantic Fishery Commission
WWF	World Wide Fund for Nature

GLOSSARY OF KEY TERMS

Autecology – the study of environmental factors and their effects on organisms.

Biological Diversity (or **Biodiversity**) - the variability among living organisms from all sources including *inter alia*, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part; this includes diversity within species, between species and of ecosystems.

Biological resources - genetic resources, organisms or parts thereof, populations, or any other biotic component of ecosystems with actual or potential use or value for humanity.

Biome – a large naturally occurring assemblage of plant and animal species that are of the same general type, e.g. tropical rain forests, tropical savannas.

Biosphere – the whole of the region of the earth's surface, the sea, and the air that is inhabited by living organisms.

Biotechnology - any technological application that uses biological systems, living organisms, or derivatives thereof, to make or modify products or processes for specific uses.

Ecosystem - a dynamic complex of plant, animal and micro-organism, communities and their non-living environment interacting as a functional unit.

Endemic species – species which are found only in a given locality, country or region.

***Ex situ* conservation** - the conservation of components of biological diversity outside their natural habitats.

Fauna – animal population present in a certain locality, country or region.

Flora – plant population of a particular region or locality, country or region.

Gene pool – the totality of genes in a particular population.

Genetic material - any material of plant, animal, microbial or other origin containing functional units of heredity.

Genetic resources - genetic material of actual or potential value.

Habitat - the place or type of site where an organism or population naturally occurs.

***In situ* conservation** - the conservation of ecosystems and natural habitats and the maintenance and recovery of viable populations of species in their natural surroundings and, in the case of domesticated or cultivated species, in the surroundings where they have developed their distinctive properties.

Protected area - a geographically defined area which is designated or regulated and managed to achieve specific conservation objectives.

Silviculture – the theory and practice of controlling forest establishment, composition and growth.

Sustainable use - the use of components of biological diversity in a way and at a rate that does not lead to the long-term decline of biological diversity, thereby maintaining its potential to meet the needs and aspirations of present and future generations.

Synecology – the study of communities of organisms and the interactions of the organisms therein.

Figure 1. Location Map of Guyana.

SOURCE: National Biodiversity Action Plan I

EXECUTIVE SUMMARY

1. INTRODUCTION

Guyana became a signatory to the United Nations Convention on Biological Diversity (UNCBD/CBD) in 1992 and ratified it in 1994. By signing on to CBD, Guyana has signaled to the international community that it is committed to implementing the agreed upon measures to conserve and sustainably utilize the country's biological resources.

The Environmental Protection Act of 1996 established the Environmental Protection Agency (EPA) and identified, among its functions (i) *to take such steps as are necessary for the effective management of the natural environment so as to ensure conservation, protection, and sustainable use of its natural resources;* (ii) *to co-ordinate and maintain a programme for the conservation of biological diversity and its sustainable use;* and (iii) *to co-ordinate the establishment and maintenance a national park and protected areas system and a wildlife protection management programme.* The EPA is the National Focal Point for the UNCBD.

One of the first tasks undertaken was the development of a National Strategy and Action Plan to integrate the implementation of the CBD into national development. This action plan, called the National Biodiversity Action Plan (1999-2004) (NBAP), was prepared in November 1999. The overall goal of the NBAP was "*to promote and achieve the conservation of Guyana's biodiversity, to use its components in a sustainable way, and to encourage the fair and equitable sharing of benefits arising out of the use of Guyana's biodiversity*'.

In 2004, the EPA, with assistance from the United Nations Development Programme (UNDP) conducted a review of the NBAP to identify the achievements and set-backs, and to plan for a second action plan – National Biodiversity Action Plan (2007-2011). The principal findings of the review were that the NBAP was ambitious and there was a slow implementation process. This was attributed to lack of funding; EPA not having sufficient trained staff and demonstrating the leadership role expected; weak participation from agencies; limited coordination where at times EPA was not aware of activities of sector agencies and how it related to CBD; and NBAC not exerting an effective enough role in guiding the implementation process. The principal recommendation from the report was that the second phase of the NBAP should focus mainly on conservation and sustainable use of biodiversity and sharing of benefits with emphasis on critical resources of Guyana such as agricultural lands, forests, coastal, marine and fresh water resources.

As a follow-up to the review, and within the framework of goals and objectives established for NBAP, the EPA has undertaken the development of a National Biodiversity Action Plan II for the period 2007-2011 with funding support from the World Wide Fund for Nature (WWF). NBAP II is not a separate plan from NBAP, but rather a continuation of the planning process with a focus on four main thematic areas of forests; agriculture; coastal resources; and, marine and freshwater resources.

2. APPROACH TO NBAP II

The EPA recruited a multi-disciplinary team of local specialists to prepare the National Biodiversity Action Plan II (2007-2011). The process began with the preparation of Situation Analyses for each of the thematic natural resource area: forests, agriculture, coastal resources, and marine and freshwater resources. These Analyses addressed the physical, biological, work-programmes and macro-variables of each thematic area and identified programme areas and activities in order to meet the UNCBD obligations.

A national workshop was held on March 1, 2007 with participation from a broad range of stakeholders from different sectors and representing several regions of the country. At this workshop, the consultancy team presented the findings from the Situation Analyses and discussed with stakeholders the key programme areas for action.

With the guidance from stakeholders, the National Biodiversity Action Plan II (2007-2011) was prepared with an elaboration of Priority Programme Areas into Project Concepts and Log Frames.

3. OBJECTIVES OF NBAP II

NBAP II should not be seen as the development of a new or separate plan from NBAP, but rather a continuation of the planning process within the framework provided by the overall goal and objectives of NBAP, guided by the recommendations of the NBAP Review Report and with focus on four main thematic areas of forests; agriculture; coastal resources, and marine and freshwater resources. Thus the overall gaol and objectives of NBAP II have been retained as formulated in NBAP.

Overall Goal: To promote and achieve the conservation of Guyana's biodiversity, to use its components in a sustainable way, and to encourage the fair and equitable sharing of benefits arising out of the use of Guyana's biodiversity.

Objectives:

- Evaluate the state of capacity nationally to achieve the above goal;
- Identify gaps and needs relating to achieving the above goal;
- Propose actions to achieve this goal and close the gaps;
- Develop activities in a number of priority areas relating to the overall goal;
- Identify the roles and responsibilities of the various stakeholder groups in the implementation of the plan;
- Obtain and harness stakeholder involvement and support for the development and implementation of the plan; and
- Increase public awareness of biodiversity.

4. SITUATION ANALYSES

The Situation Analyses addressed the physical, biological, work-programmes and macro-variables of each thematic area with focus on the provisions within the UNCBD for each area; UNCBD Programme of Work for each thematic area; extent to which the first NBAP addressed each thematic area; present context of the thematic area in relation to biodiversity; Guyana's progress in implementing the Work Programme for each thematic area, and key actions needed within each thematic area in order to improve the focus on biodiversity in the country.

5. PROGRAMME AREAS

The findings and recommendations of the Situation Analyses exercise were presented to stakeholders at a national workshop held on March 1, 2007. Stakeholders at the workshop identified Programme Areas and activities for action for each thematic area.

There was general consensus among stakeholders at the workshop that many of the Priority Programme Areas were cross-cutting the thematic areas. With guidance provided by the stakeholders, and the concurrence and approval of the EPA, the following Programme Areas were identified for the development of project concepts and log frames.

Cross-Cutting Programme Areas

1. Consolidation of the Policy, Legal and Administrative Framework.
2. Institutional Strengthening/Human Resources Capacity Building.
3. Mainstreaming Biodiversity.
4. Integrated Land Use Planning.
5. Awareness and Education.
6. Research and Data Collection, Information Sharing and Management.
7. *In situ* and *Ex situ* Conservation of Biodiversity.
8. Monitoring.

Other Programme Areas

9. Promoting Sustainable Initiatives in the Agriculture Sector.
10. Promoting Sustainable Initiatives in the Forestry Sector.
11. Habitat Destruction and Associated Impacts on Coastal Resources.
12. Promoting Sustainable Initiatives in the Marine and Inland Water Resources Sector.

For each of the 12 Programme Areas, one project concept and log frame was prepared. The identification of the individual projects was based on recommended actions from the situation analysis findings and workshop working groups. For the cross-cutting programme areas, the projects identified are generally of a broad scope to cover all four thematic areas.

These 12 projects form the basis of NBAP II over the period 2007-2011 and their implementation will facilitate meeting UNCBD objectives as well as meeting the Work Programme requirements for these four thematic areas.

Table 1. Summary of Projects.

Programme Area	Project	Key Outputs	Executing Agency	Time Frame
Consolidation of the Policy, Legal and Administrative Framework.	Consolidating the policy, legal and regulatory, and administrative frameworks in Guyana that will support the sustainable use, protection and management of the country's biological diversity.	1. Assessment of Policy, Legal and Administrative Frameworks for biodiversity management by June, 2008. 2. Assessment of structures required by institutions for the new harmonized Policy and Legal Framework by August, 2008. 3. Government Approval of Assessment Findings by December, 2008. 4. Revised Policies and Laws by June, 2010. Streamlined Institutions Structures and Mandates by December, 2010.	Environmental Protection Agency	Three Years (2008-2010)
Institutional Strengthening/Human Resources Capacity Building.	Fostering effective and sustainable management of the Guyana's biological diversity through optimum human resources deployment and management.	1. Assessment of Skills by June, 2008. 2. Strategic Human Resources Plan for recruitment, use and retention of skills by December, 2008. 3. Capacity building exercises within and amongst institutions beginning June, 2009. 4. Assessment, procurement and use of relevant equipment and technologies beginning by January, 2010.	Environmental Protection Agency	Three Years (2008-2010)
Mainstreaming Biodiversity.	Integrating biodiversity issues and activities into strategic and operational planning of key responsible agencies.	1. List of responsible agencies by December, 2007. 2. Review of agencies' planning cycles by March, 2008. 3. List of key biodiversity issues allocated to agencies by June, 2008. 4. Report on collaborative approaches to integrate biodiversity issues by September, 2008. Written guidelines for monitoring integration of biodiversity issues into agencies' plans by December, 2008.	Environmental Protection Agency	One Year (2007-2008)
Integrated Land Use Planning.	Development of planning and operational guidelines for synergistic utilisation of natural resources in the State Forests of Guyana.	1. Identified Pilot Area by December, 2007. 2. Description of land-use and GIS maps of Pilot Area by December, 2007. 3. Report on planning procedures by June, 2008. 4. Written guidelines on best practice by December, 2008.	Guyana Forestry Commission	Two Years (2007-2009)

Programme Area	Project	Key Outputs	Executing Agency	Time Frame
		5. Model land-use plan by June, 2009. 6. List of criteria and indicators by December, 2009.		
Awareness and Education.	Developing an Integrated Information, Communication (IEC) System for Biodiversity Conservation and the execution of an Awareness Programme to support the sustainable use, protection and management of Guyana's biological diversity.	1. Situation Analysis of previous biodiversity education and awareness efforts by June, 2008. 2. Training Programme and Materials by December, 2008. 3. Execution of Training Programme by December, 2009. 4. Biodiversity Conservation Awareness and Information Network System developed by June, 2010.	Environmental Protection Agency	Three Years (2008-2010)
Research and Data Collection, Information Sharing and Management.	Strengthening the framework for biodiversity research, data collection, information sharing and management in Guyana.	1. Situation Analysis on the extent of data collection and research on biodiversity by June, 2008. 2. Examination of current arrangements for institutional collaboration and cooperation for biodiversity information collection, sharing and management by December, 2008. 3. Initiatives to strengthen the current system for biodiversity information sharing and management, beginning by January, 2009.	Environmental Protection Agency	Two Years (2008-2009)
In situ and *Ex situ* Conservation of Biodiversity.	Consolidating *in situ* and *ex situ* conservation of Guyana's biological diversity for effective use and management.	1. Coordinated and expanded *ex situ* conservation activities by December, 2008. 2. Consolidated research and development programs for *in-situ* conservation of biodiversity by December, 2009. 3. Development and expansion of Guyana's Protected Areas System (GPAS) beginning by January, 2008.	Environmental Protection Agency	Four Years (2008-2011)
Monitoring.	To improve biodiversity monitoring across sectors and to develop a feedback cycle to guide the implementation of biodiversity work programmes.	1. Review the "Draft Strategy for Biodiversity Monitoring and Sector Indicators" and identify indicators across the four thematic areas under NBAP II by June, 2009. 2. Conduct pilot demonstration on the application of the indicators within a selected thematic area by December, 2009. 3. Develop and Implement a Monitoring and Evaluation Mechanism for the four thematic areas based on use of the indicators by June, 2010.	Environmental Protection Agency	Two Years (2009-2010)

Programme Area	Project	Key Outputs	Executing Agency	Time Frame
Promoting Sustainable Initiatives in the Agriculture Sector.	Promote and support the development of sustainable initiatives in agriculture through the development of organic agriculture with focus on Region 1, Guyana.	1. Assessment of the progress of organic agriculture in Guyana by June, 2009. 2. Strategy and Action Plan (SAP) for the promotion and development of Organic Agriculture in Guyana using Region 1 as pilot study by December, 2009. 3. Implementation of the Strategy and Action Plan beginning by June, 2010.	Environmental Protection Agency	Three Years (2009-2011)
Promoting Sustainable Initiatives in the Forestry Sector.	Develop protocols and project concepts for the sustainable and economic utilisation of Non-Timber Forest Products (NTFPs) in hinterland communities in Guyana.	1. Report on success stories in NTFP utilisation by December, 2007. 2. List of NTFPs in Guyana of potential economic value and potential markets by June, 2008. 3. Outreach and awareness programme to selected communities by December, 2008. 4. Protocols for sustainable utilisation of NTFPs by communities by June, 2009. 5. Community specific project concepts and potential funding sources by December, 2009.	Guyana Forestry Commission	Two Years (2007-2009)
Habitat Destruction and Associated Impacts on Coastal Resources.	The effective management Guyana's coastal biodiversity to minimize and prevent the destruction of coastal habitats and protect Guyana's coastal biological diversity.	1. Inventory of major coastal habitats and ecosystem types by June, 2008. 2. Rapid ecological status assessment to determine richness of biodiversity at the coastal habitats by December, 2008. 3. Biogeographic assessment of coastal habitats to identify priority areas for action by June, 2009. 4. Assessment of the demand and uses, economic, social and cultural to which coastal habitats and ecosystems in Guyana are put by December, 2009. 5. Training of relevant officers in rapid assessment techniques by June, 2010. 6. Workshops to sensitise stakeholders on activities and issues regarding coastal habitats, impacts, monitoring and management measures for maintaining ecosystem and habitat integrity by December, 2010.	Environmental Protection Agency	Three Years (2008-2010)

Programme Area	Project	Key Outputs	Executing Agency	Time Frame
Promoting Sustainable Initiatives in the Marine and Inland Water Resources Sector.	Promoting sustainable initiatives in the marine and inland water resources sector.	1. Plan of Action for implementing Seabob Management Strategy by June, 2008. 2. Government approval of Management Strategy by September, 2008. 3. Establish legal framework for the implementation of the strategy by March, 2009. 4. Implementation of Strategy beginning by April, 2009.	Ministry of Agriculture, Fisheries Department (DoF)	Two Years (2008 - 2009)

6. THE WAY FORWARD

The objective of NBAP II is to continue on the foundation built during the implementation of NBAP with a focus on a thematic rather than programmatic approach. The Fuentes review of NBAP, as well as many stakeholders, were of the view that the extensive list of projects across Programme Areas for NBAP I were too ambitious for a five-year period, especially for a country like Guyana with limited financial and technical resources. Despite this, EPA has been able to report that funding has been sourced for about 90% of projects identified in NBAP, and some have been completed or are under implementation.

Despite bringing to focus long-term financing and sustainability, and identifying approaches and actions, the biggest challenge which faced NBAP was the EPA not being adequately supported by the institutional structure, and human and financial resources to effectively coordinate implementation. EPA has prepared its Strategic Plan (2006-2010) which seeks to address these critical issues. Additionally, the Fuentes Report as well as the National Strategy and Action Plan 2007-2011 *for Synergistic Environmental Capacity Development for Biodiversity, Climate Change and Land Degradation* have outlined approaches which can facilitate efficient implementation of NBAP II. To facilitate the effective implementation of NBAP II, the following are recommended:

Institutional Arrangements

1. EPA, as National Focal Point for coordinating and guiding the implementation of NBAP II, should assign a Coordinator and Monitor with responsibility for NBAP II.

2. EPA should review the approach and recommendations from NBAP on mobilising financial and technical assistance, and within the context of the Strategic Plan (2006-2010), identify potential sources of funding for projects under NBAP II, prepare proposals and coordinate funding and other support for projects.

3. The National Biodiversity Advisory Committee (NBAC) should be expanded to include private sector and NGO representation, in a similar way to the National Climate Committee while at the same time take on a more coordinating role in the implementation of NBAP II and facilitate decision-making at the level of the Natural Resources Environment Advisory Committee (NREAC) if required. Recognising as well, the need to establish a statutory body for addressing biodiversity issues, NBAC can be established in this capacity to function as the principal body which oversees and coordinate all aspects of UNCBD and biodiversity activities.

4. The EPA, taking the lead, and with support from NBAC and NREAC, should coordinate the NBAP II and UNCBD Work Programme activities for the four thematic areas among institutions with activities being incorporated into the Work Plans of sector institutions. At the same time, the interest and roles of national stakeholders should be recognised and their participation encouraged. Annex I elaborates the functions and responsibilities of key agencies as well as national stakeholders' interests and roles in biodiversity conservation.

Monitoring, Evaluation and Reporting

NBAP outlined a comprehensive approach to monitoring, evaluation and reporting which should be maintained during the implementation of NBAP II. Continuous monitoring and evaluation of the implementation of NBAP II is required and a systematic monitoring framework for the implementation of NBAP II should be developed by the EPA to include quarterly and annual progress reports, assessment of achievements against indicators, and a mid-term review (2009) to guide any adjustments that may be required. Reports should be presented to the NBAC for review to allow for wider stakeholder input and to guide resultant Annual Work Plans.

Next Steps in Implementing NBAP II

The successful implementation of NBAP II will hinge on high level political support and commitment towards provision of resources, establishing a financial strategy, and a country-driven process with wide stakeholder ownership and participation. The following are next steps in the implementation of NBAP II:

1. Approval of NBAP at the level of NREAC and/or Cabinet.
2. Establish a financing strategy for securing funds to implement NBAP II.
3. Establish the institutional arrangements for implementation to include Annual Work Programmes of EPA and key institutions.
4. Place priority on implementing actions which require little or no funding such as mechanisms for better coordination and collaboration among sector and other institutions.
5. Monitor, evaluate and report on implementation.

1. INTRODUCTION

1.1 BACKGROUND

Guyana became a signatory to the United Nations Convention on Biological Diversity (UNCBD/CBD) in 1992 and ratified it in 1994. The CBD is one of the five important outcomes of the Earth Summit held in Rio de Janeiro, Brazil in 1992.

To date, 188 Parties have committed themselves to undertaking national and international measures, aimed at achieving three critical objectives: (i) Conservation of Biological Diversity; (ii) Sustainable use of its components; and (iii) Fair and equitable sharing of benefits arising out of the use of genetic resources, including by appropriate access to genetic resources, and by appropriate transfer of relevant technologies, taking into account all rights to those resources and to technologies, and by appropriate funding.

The Conference of the Parties (COP) of the Convention, responsible for keeping under review the implementation of the Convention, as well as steering its development, established seven Thematic Programmes of Work: *(1) Agricultural Biodiversity; (2) Dry and Sub-humid Lands Biodiversity; (3) Forest Biodiversity; (4) Inland Waters Biodiversity; (5) Island Biodiversity; (6) Marine and Coastal Biodiversity; and (7) Mountain Biodiversity.*

For each Programme of Work, there is an established vision, basic principles, key issues for consideration, potential outputs, a suggested timetable and means for achieving these. A number of cross-cutting issues have been identified as relevant to all thematic areas and to a great extent, support work under thematic programmes. These are identified as Access to Genetic Resources; Traditional Knowledge Innovations and Practices (Article 8(j)); Indicators; Global Taxonomy Initiative; Public Education and Awareness; Incentives; Alien Species; 2010 Biodiversity Target; Biodiversity and Tourism; Climate Change and Biological Diversity; Economics, Trade and Incentive Measures; Ecosystem Approach; Global Strategy for Plant Conservation; Impact Assessments; Sustainable Use of Biodiversity; Technology Transfer and Cooperation; Protected Areas; and Liability and Redress.

The CBD is important to Guyana, a country very rich in biodiversity that provides a global service, and as a source of livelihood for a large proportion of the country's population. By signing on to CBD, Guyana has signaled to the international community that it is committed to implementing the agreed upon measures to conserve and sustainably utilize the country's biological resources. The Convention offers the framework and guidance for the development of appropriate measures for the conservation and sustainable utilization of biodiversity; provides a basis for Guyana to develop linkages with other countries and with relevant organizations to share experiences, and to develop capacity and databases that are essential for biodiversity management; and provides an opportunity for Guyana to benefit from the provisions available under the Convention, such as the sharing of information, technical cooperation, technology transfer, and financial support.

As a signatory to the Convention, Guyana's obligations include Development of national strategies, plans and programmes for the conservation and sustainable use of biological diversity; Identification and Monitoring of biological diversity; *In-situ* conservation; *Ex-situ* conservation; Sustainable Use of Components of Biological Diversity; Incentive Measures (economically and socially sound measures that act as incentives for conservation and sustainable use of component of Biological Diversity); Research and Training; Public Education and Awareness; Impact Assessment and Minimizing Adverse Impacts; Access to Genetic Resources (for environmentally sound uses); Access to and Transfer of Technology; Exchange of information; Technical and Scientific Cooperation; Handling of Biotechnology and Distribution of its Benefits; and Provision of Financial Resources (to undertake, in accordance with capabilities, the objectives of the Convention with its national plans, priorities and programmes).

The Environmental Protection Act of 1996, places responsibility on the EPA, the designated National Focal Point for UNCBD to: (i) *to take such steps as are necessary for the effective management of the natural environment so as to ensure conservation, protection, and sustainable use of its natural resources;* (ii) *to co-ordinate and maintain a programme for the conservation of biological diversity and its sustainable use;* and (iii) *to co-ordinate the establishment and maintenance a national park and protected areas system and a wildlife protection management programme.*

One of the first tasks undertaken was the development of a National Strategy and Action Plan to integrate the implementation of the CBD into national development. This action plan, called the National Biodiversity Action Plan (1999-2004) (NBAP), was prepared in November 1999.

The overall goal of the NBAP was *"to promote and achieve the conservation of Guyana's biodiversity, to use its components in a sustainable way, and to encourage the fair and equitable sharing of benefits arising out of the use of Guyana's biodiversity"*'.

One of the activities identified within the NBAP was the undertaking of an evaluation of the programme areas in the Plan to identify the achievements and set-backs, and to plan for a second action plan – National Biodiversity Action Plan (2007-2011). With assistance from the United Nations Development Programme (UNDP), the EPA conducted a review of the NBAP in 2005, and as part of the National Capacity Self Assessment Project (NCSA) (2006 – 2007) which was supported by UNDP, there was a Stock Taking and Capacity Assessment of Guyana's implementation of UNCBD.

1.2 FINDINGS OF THE NBAP IMPLEMENTATION REVIEW (THE FUENTES REPORT)

The review of NBAP as presented in the Fuentes Report, 2005, pointed to a very ambitious NBAP for which there was a slow implementation progress. This was attributed to lack of funding; insufficient trained staff; weak participation; limited coordination; leadership and guidance issues.

The recommendations offered by Fuentes for the second phase of NBAP were:

1. EPA should play a more proactive role in NBAP implementation and should assign specific personnel responsibilities for coordinating and monitoring the implementation of NBAP.

2. The National Biodiversity Advisory Committee should be expanded to include representation from non-governmental and private sector stakeholders, in particular those linked to the productive sectors such as agriculture, forestry, fisheries, tourism, etc.

3. EPA should implement a strong monitoring and evaluation component to the NBAP II and ensure implementation of all components.

4. The second phase of the NBAP should focus mainly on conservation and sustainable use of biodiversity and sharing of benefits with emphasis on critical resources of Guyana such as agricultural lands, forests, coastal, marine and fresh water resources.

1.3 FINDINGS OF THE NCSA STOCKTAKING AND CAPACITY ASSESSMENT OF UNCBD IMPLEMENTATION

The NCSA Stocktaking and Capacity Assessment exercise undertook a comparison between the UNCBD obligations (COP Decisions) and national provisions and identified gaps in implementation. Some of the more critical needs identified covered the legislative; policy and regulatory framework; full identification of flora and fauna; categorisation of activities and processes that have significant impacts on the conservation and sustainable use of biological diversity; monitoring and data management; assessments on the environmental impacts of tourism; research and monitoring of alien invasive species; methods and mechanisms to determine sustainability of various intensities of use, research and training; sustainable livelihoods; incentive measures to promote sustainable use and conservation; and inter-agency collaboration.

1.4 PROGRESS IN MEETING UNCBD OBLIGATIONS AND IMPLEMENTING NBAP

Section 5 and Annex II outline in detail, progress made in each of the Thematic Areas in implementing the UNCBD Work Programme.

Since the completion of the NBAP implementation period, 1999–2004, and to date, the EPA has reported that Guyana has made significant progress in the implementation of NBAP whereby funding has been sourced for about 90% of projects identified in NBAP I, and some have been completed and others are under implementation.

Table 2 provides a summary update. There are a number of initiatives outside of the framework of NBAP and the UNCBD Work Programmes which are also contributing to meeting UNCBD obligations. These are elaborated within the Situation Analyses of the four Thematic Areas of Forests; Agriculture; Coastal Resources; and Marine and Freshwater Resources.

Table 2. Progress to date of Implementation of NBAP Projects (provided by EPA).

Programme Area	Number	Title	Status			Remarks
			Not started	Ongoing	Completed	
PHASE I: FOUNDATION PROGRAMMES						
Mobilization of Financial and Technical Resources.	1	Ensuring short- and long-term financing and sustainability of the National Biodiversity Action Plan.		A Biodiversity Development Specialist was hired by the EPA to assist in the sourcing of funds for projects in NBAP during the early period of implementation.		The BDS has been absorbed into the core staff of the EPA.
	2	Mobilization of financial resources from the regional and international donor community.		No specific programme has been developed to do this activity; however, project proposals have been developed and submitted to donors for funding. Funding obtained from FFI, WWF, GEF, EU, USAID, UNDP and KfW.		Project proposals are being prepared by staff of the EPA.
	3	Mobilization of financial resources from national sources.		GoG provided counterpart funding for projects, e.g. Wildlife Surveys Project. GoG also provided funding for staff positions in the Natural Resource Management Division, EPA.		In addition to financial contributions, the GoG also contribute significant in-kind resources such as staff, office space, etc. to the projects.
	4	Mobilization of financial resources from the sustainable use of biodiversity and other new and innovative mechanisms.		EPA has established revenue generating mechanisms through the Research Process for applications and Permits. The Permitting process		Innovative mechanisms have been executed or implemented by other sector agencies such as the GFC. The Conservation Concession that is being

Programme Area	Number	Title	Status			Remarks
			Not started	**Ongoing**	**Completed**	
				required by CITES ensures that Wildlife is traded sustainably. Funds are generated for the GoG by application of levies and taxes.		managed by CI is an example of such a mechanism.
	5	Mobilization of technical resources from regional and international sources		Continued partnerships with international NGOs such as WWF, CI, FFI, and local bodies as Iwokrama, have ensured that there is significant technical support for programmes within the NBAP. This will include both capacity building and provision of equipment.		Technical support is usually built into projects.
Human Resources and Institutional Capacity Building.	6	Strengthening of the Environmental Protection Agency's capacity for administration and integrated planning of the biodiversity sector.		Staff positions are being filled for some of the vacancies in the NRMD	EPA has formalised its Natural Resources Management Division in 2002. This Division has three Units - Protected Areas, Biodiversity, and Wildlife. Training in biodiversity and protected areas has been conducted in most of the Administrative Regions in Guyana in collaboration with the Ministry of Local Government. IDB Phase I and II Programmes have provided significant support for EPA's infrastructure (vehicles, computers, field equipment, office	Personnel have benefited from local and overseas training.

Programme Area	Number	Title	Status			Remarks
			Not started	**Ongoing**	**Completed**	
					equipment. etc.).	
	7	Strengthening of the National Biodiversity Advisory Committee.		The NBAC will be re-constituted as a statutory body to improve its *locus standi* on biodiversity issues and will have wide representation.		
	8	Strengthening of Regional Institutions.		Collaboration has been strengthened with Administrative Regions. Relationships with Ministry of Amerindian Affairs, Ministry of Local Government and Amerindian NGO's have been strengthened.	MoUs have been signed with the SRCS, Iwokrama, GMTCS, etc.	
Research and Information on Biodiversity.	9	Preparation and implementation of a prioritized programme of biodiversity research for Guyana.			A national workshop on priority setting for biodiversity research in Guyana was held in April 2002.	
	10	Preparation and maintenance of a national database on biodiversity.		The EPA has received funding from UNDP to develop a National Biodiversity Research Information System (NBRIS) which will be completed in May 2007.		
	11	Development and implementation of a national clearing house mechanism for biodiversity.		A project proposal has been re-submitted to the UNDP-GEF for funding of this component as		

Programme Area	Number	Title	Status			Remarks
			Not started	Ongoing	Completed	
				part of the Enabling Activity Project.		
	12	Developing a capacity for the genetic characterization of economically important species of Guyana.		This is being done by sector organisations. NARI with funding from USAID has begun work on genetic characterisation of some crops.		
Consolidation of the Policy, Legal and Administrative Framework.	13	Developing a legal framework for promoting the protection, compensation for local knowledge, innovations and techniques relating to biodiversity.		A project proposal has been re-submitted to the UNDP-GEF for funding of this component as part of the Enabling Activity Project.		
	14	Comprehensive review and updating of national legislation relating to biodiversity, access and benefit sharing.		A draft Regulation on Access and Benefit Sharing is being finalised.	A National Policy on Access and Benefit Sharing of Genetic Resources has been submitted to Cabinet Sub-Committee for endorsement	
	15	Comprehensive review and updating of national legislation on natural resources.		Process for the development of the Protected Areas Legislation has begun. Finalisation of the Wildlife Conservation and Management Regulations has begun. Revision of the Forestry Act of 1953 has begun.	Species Protection Regulations (SPR) enacted in 1999.	
	16	Developing national policies on wildlife, fisheries and biodiversity.	National Biosafety Framework developed - to be endorsed by	Fisheries Act enacted; National Policy on ABS drafted; Mangrove Management Plan prepared;	The CBD is providing financial support for the implementation of a coastal zone management project.	

Programme Area	Number	Title	Status			Remarks
			Not started	Ongoing	Completed	
			Cabinet. The SPR is currently being revised.	Integrated Coastal Zone Management Plan prepared.		
	17	Fortifying the national quarantine and biosafety processes.	Implementation of the NBF	A National Biosafety Clearing House is being developed.	National Biosafety Framework drafted. The Plant Protection legislation is being revised to meet the requirements of the international Plant Protection Convention (IPPC).	Project Concepts have been prepared and submitted for funding for the implementation of the NBF.
Public Awareness and Education.	18	Incorporating studies on environment and biodiversity into the curricula of schools.			Teaching manuals incorporating environmental themes were produced as curriculum supplements in the Social Studies, Language, Mathematics and Science subjects areas for level three of primary schools.	This was a pilot project. Due to inadequate financial resources, the extent of the use of the supplement has not yet been surveyed.
	19	Training of teachers to teach courses on environment and biodiversity.			A national 5-day workshop was conducted to train teachers to use the manuals.	Approximately sixty teachers were trained during this workshop.
	20	Preparation of instructional material for biodiversity education and awareness programmes.			A module on the environment was produced as part of the Integrated Science curriculum for secondary schools	
	21	Developing non-formal methods of promoting biodiversity education and awareness.			Over ninety Environmental clubs have been created around the country. Several workshops, seminars and	An assessment will be conducted to determine the level of activity in the clubs.

Programme Area	Number	Title	Status			Remarks
			Not started	**Ongoing**	**Completed**	
					media programmes have been held and a variety of bookmarks, posters, exhibitions, brochures, newsletters has been produced.	
***In situ* and *ex situ* conservation.**	22	Developing a national system of protected areas.		The Small Grants component of the GPAS Project began in February 2006 with funding from the German Government. The Protected Areas Legislation will be developed with expected financial support from KfW.	A management plan has been completed for the southern region of Guyana where a community owned conservation area will be established. Public Awareness and community resource evaluation were done for the Kanuku Mountains and Shell Beach.	
	23	Coordination and expansion of *ex situ* activities.		The collections at the Botanical Gardens and Zoological Park are being maintained. NARI continues to hold small gene-banks (seed and field) for selected crops.		
Incentive Measures.	24	Review of incentives and disincentives for conservation and sustainable use of biodiversity and the identification of sustainable economic alternatives to activities that threaten biodiversity.		The certification of timber was pursued by the Guyana Forestry Commission. This will ultimately lead to more sustainable practices and more ideal markets for forest products. Some economic alternatives have been pursued to support		The GFC is also pursuing sustainable economic alternatives with regards to chainsaw use for logging. Proposal submitted for GEF funding of Sub-

Programme Area	Number	Title	Status			Remarks
			Not started	Ongoing	Completed	
				conservation of biodiversity at Shell Beach.		project on "Design and Approaches relevant to the implementation of Incentive Measures".
Measures for Sustainable Use.	25	Criteria and indicators for sustainability of biological resources.		Micro-level Forest Biological indicators are currently being developed. A strategy for indicators in the Agriculture sector is being developed.	Macro-level Indicators have been identified for forest biological diversity.	Implementation of the Action Plan for the Micro-level indicators will be based upon commitment and funding.
Monitoring, Evaluation and Reporting.	26	Monitoring, Evaluation and Reporting of the implementation of Programme Areas.			The first report to the CBD.	The second and third national reports have been submitted to UNDP for GEF funding.
	27	Advance recommendations on modifications/improvements to the CBD through COPs and SBSTTA.		The EPA attended, participated in and supported regional and national positions at these fora.		
PHASE 2						
Mobilization of Financial and Technical Resources.	28	Strengthening of agencies and groups involved in biodiversity management.		Active support given to agencies and NGO's whenever these bodies seek funding.		
	29	Strengthening capacity of other institutions to undertake biodiversity projects.			FFI Capacity Building Project for Shell Beach	
Research and Information on Biodiversity.	30	Support for the establishment of a national centre for biological collections.			An assessment was completed with recommendations to reorganise the national biological collections.	Need to seek collaboration with institutions to implement recommendations
	31	Pilot Study on Economic				Efforts are being made to

Programme Area	Number	Title	Status			Remarks
			Not started	Ongoing	Completed	
		Valuation of biodiversity.				secure funding for a study on contingency valuation for Guyana's Biodiversity.
	32	Revision of the Country Study on Biological Diversity.	Not Started			The research process by foreign researcher has generated a large body of data that will add to the information on biological diversity.
Monitoring, Evaluation, and Reporting.	33	Evaluation of implementation of the initial cycle of the National Biodiversity Action Plan.			A review of the NBAP was conducted in 2005 with recommendations for NBAP II.	

2. CONTEXT OF NBAP II

2.1 IMPLEMENTATION FRAMEWORK FOR NBAP II

Guyana's commitment to biodiversity conservation and the meeting the obligations of the Convention are reflected in the various initiatives at the level of policy, planning, institution and legislation. These collectively form the implementation framework for NBAP II.

Table 3 below provides a summary of the key policies and plans in the natural resources and environment sector.

2.1.1 POLICY

The overarching policy framework within which the NBAP II will be implemented is shaped by the National Development Strategy 2001-2010 (NDS) and the Guyana Poverty Reduction Strategy Paper 2001-2005 (PRSP).

National Development Strategy 2001-2010 (NDS)

The NDS represents the highest level of national planning with the principal objectives being: (i) to attain the highest rates of economic growth that are possible; (ii) to eliminate poverty in Guyana; (iii) to achieve geographical unity; (iv) to attain an equitable geographical distribution of economic activity; and (v) to diversify the economy. It is an integrated document outlining the national strategy and policy in a number of priority areas including agriculture, environment, forestry, fisheries, mining, tourism, land management and the eradication of poverty. The NDS was formally endorsed in Guyana's Parliament in December, 2005. Within the NDS, there is a focus on the environment in a holistic way with specific actions recommended to improve practices, monitoring and enforcement, and promote cross-sectoral coordination and integration for environment and natural resources management.

Guyana Poverty Reduction Strategy Paper 2001-2005 (PRSP)

The PRSP notes that to achieve its objectives, "Government's strategy will be to: (i) enforce rigorously the provisions of the Environmental Protection Act; (ii) promote public awareness of the benefits of sound environmental policy; and (iii) involve local communities in developing programmes to manage vulnerable ecosystems and conserve the resources of protected areas. In addition, the EPA will monitor and enforce standards for air emissions, effluent discharge, and noise levels of industries; ensure stricter compliance with environmental management plans, conduct regular environmental audits; and promote the training of adequate numbers of technicians to monitor adherence to legal environmental standards".

Biodiversity is seen as a vehicle to reduce poverty: *"Finally, Guyana's bio-diversity provides the country with a unique tourism product whose full potential remains to be realized. Government strategy in these sectors will be to support the private sector by removing constraints that impede progress and provide the infrastructure that stimulates production"*.

The Policy and Performance Matrix 2002–2005 also provides a useful area in which Convention obligations could be linked. In the area of regulatory framework, an improved framework for land development is identified as a strategic measure. This is closely linked to the cross-cutting issue of land use and planning. An important action is the computerization of land information and transparent mechanisms for land distribution.

Table 3. Summary of the key policies, plans and legislation in the natural resources and environment sectors.

Policies	Date/Status
National Development Strategy 2001-2010	2000; Currently being implemented by Ministries and Line Agencies
National Poverty Reduction Strategy	November 2001; In the Implementation Phase
National Land Use Policy	2005; In draft, to be considered by Government
National Forest Policy	1997; In the Implementation Phase
Policy on Access to Genetic Resources and Fair and Equitable Sharing of Benefits Arising from their Utilisation	2006; In draft, to be considered by Government
Biotechnology, Biosafety and Biosecurity Policy	2006, In draft, to be considered by Government
Plans	**Date/Status**
National Strategy for the Conservation and Sustainable Use of Guyana's Biodiversity	1997, In the Implementation Phase
National Biodiversity Action Plan	30 November 1999; Review of implementation completed and a Second Phase NBAP II (2007-2011) being prepared.
National Environmental Action Plan	2001-2005; In the Implementation Phase
National Forest Plan	April 2000; To be formally approved by Cabinet.
Integrated Costal Zone Management Action Plan	December 2000, In the Implementation Phase
Fisheries Management Plan	2006; updated Draft prepared for consideration by Government
National Mangrove Management Action Plan	November 2001; In the Implementation Phase
Climate Change Action Plan	April 2000; In the Implementation Phase.
National Ecotourism Development Plan	21st January 1999; Considered by Cabinet with endorsement of some elements, being implemented by MINTIC and GTA.
5 Year Tourism Development Action Plan	January 2006; To be presented to Cabinet for consideration
Sector	**Legislation**
Agriculture	National Agricultural Research Institute of Guyana Act (1984) Plant Protection Act (1942) Animal Diseases Act (1936) Animals (Movement and Disease Prevention) Act No. 14 of 2003 Pesticides and Toxic Chemicals Control Act (2002) Guyana Rice Producers Association Act (1946) National Agricultural Research Institute of Guyana Act (1984) Plant Protection Act (1942)
Fisheries	Fisheries Act (2002) Fisheries Regulations (1959) Fisheries (Pin Seine) Regulations (1962) Maritime Boundaries Act (1977) Fisheries Act (2002)

Sector	Legislation
Wildlife	Fisheries Regulations (1959) Importation of Bees Act (1935) Wild Birds Protection Act (1919) Species Protection Regulations (2000) Aquatic Wildlife Control Regulations Plant Protection Act CAP 68:03 Importation of Bees Act (1935) Wild Birds Protection Act (1919) Species Protection Regulations (2000)
Land Use Planning, Coastal Management and Flood Defence	Sea Defence Act (1933) Forests Act Town and Country Planning Act (1948) Municipal and District Councils Act Public Health Act State Lands Act Housing Act (1948) Drainage and Irrigation Act Water and Sewerage Act (2002) Maritime Boundaries Act (1977)
Energy	Guyana National Energy Agency Act, Act No.33 of 1997 Hydroelectric Power Act (Cap. 56:03, Amended Act 1 of 1972)
Land Planning	Guyana Lands and Surveys Commission Act, Act No 11 of 1999 Acquisition of Land for Public Purposes Act (Cap. 62:05, Act 31 of 1914 and amendments) Acquisition of Land (Land Settlement Act; Cap. 62:06 Act 13 of 1957 and amendments) Acquisition of Lands (Act 2 of 1984 [Not Beneficially Occupied]) Title to Land (Prescription and Limitation) Act (Act 62 of 1952 and amendments) District Lands Partition and Re-allotment Act (Cap. 60:03, Act 16 of 1926 and amendments) State Lands Resumption Act (Cap. 62:02 Act 30 of 1905 and amendments)
Mining	Mining Act (Act 20 of 1989, Act 34 of 1920 and amendments) Blasting Operations Act Petroleum (Exploration and Production) Act Bauxite Nationalisation Act Minerals Act Guyana Geology and Mines Commission Act (Act 9 of 1979) Geological Survey Act (Cap, 59:02 Act 6 of 1918)
Environmental Management and Regulation	Environmental Protection Act, Act No. 11 of 1996
Forestry	Forests Act CAP 67:01 Timber Forest Export Act (1973)
Indigenous Peoples	Amerindian Act (Act No. 6 of 2006) Amerindian Land Commission CAP 59:03
Tourism	Guyana Tourism Authority Act (2002)
Protected Areas	Kaieteur National Park Act (Cap. 20:02 and amendments, Act 41 of 1929, amended by Act 4 of 1972, further amended in 1999 and 2000) Iwokrama International Centre for Rain Forest Conservation and Development Act (1996) National Parks Commission Act (Act 23 of 1977)

The actions identified for modification of the economic base are also important as they relate to the restructuring of the sugar industry and modernisation of agricultural practices. So too, are those actions relating to the collection of information and data. Critical actions include: *"Develop standard formats for data collection, especially social sector data; strengthen management information systems; assign statisticians and MIS personnel in regions to collect economic and social data; co-ordinate data work and institutional strengthening with donors define more clearly the role of the Thematic/Working Groups"* (PRSP, 2001-2005).

The 2005 progress report on the PRSP has raised the profile of the environment with the specific inclusion of a section on this issue.

The PRSP is directly linked to the NDS in the areas of economic policy, good governance, infrastructure development and improvement in social services with the objective of reducing poverty. The main goals of the PRSP are: (i) sustained economic expansion within the context of a deepening participatory democracy; (ii) access to social services including education, health, water and housing; and (iii) strengthening, and where necessary, expansion of social safety nets.

The NDS and the PRSP complement each other in setting out the country's economic and social development in the short- and long-term. Both strategies take into account environmental and natural resources management, agricultural production, and improvements in the social sectors, amongst others, which are important to combat land degradation directly and indirectly. They have a common objective which is the reduction of poverty.

Land Use Policy

A draft Land Use Policy (2005) for Guyana has been developed and is currently being reviewed by Government. This policy is expected to provide the guiding framework for coordination among various land uses, promote optimum land use as well as integration of land use and to inform the preparation of a National Land Use Plan. The Guyana Land and Surveys Commission (GSLC), which has overall responsibility for land use planning, has taken the initiative to prepare pilot regional plans for specific Administrative Regions of Guyana as well as the development of a Corridor Land Use Plan for the Linden-Lethem Road. A National Land Use Policy and Plan is envisaged to support biodiversity conservation by optimising land use and minimising adverse impacts from competing land uses.

The National Forestry Policy

Guyana's National Forestry Policy (NFP) was approved by Government in 1997 and underscores the importance of forest management in the process of national development. The overall policy objective is *'to conserve, protect, manage and utilise the nation's forests; while ensuring that the productive capacity of the forests for both goods and services is either maintained or enhanced'*. In relation to biodiversity, the NFP seeks *"to achieve improved sustainable forest yields, while ensuring the conservation of ecosystems, biodiversity and the environment; and to seek to ensure watershed protection and rehabilitation, prevent and arrest soil erosion and the degradation of forests, grazing lands, soil and water"* (NFP, 1997), among other things. To achieve these goals, Guyana has prepared a new Forests Bill which is presently being reviewed.

National Policy on Access to Genetic Resources and Fair and Equitable Sharing of Benefits Arising from their Utilisation and proposed Regulations on ABS of Biological Resources developed under the provisions of the Environmental Protection Act 1996 (No. 11 of 1996).

Guyana, in 2006, developed a draft National Policy on Access to Genetic Resources and Fair and Equitable Sharing of Benefits arising from their Utilisation (ABS). The policy examines Access and Benefit Sharing (ABS) within the context of Guyana and the CBD, defines the mandates and responsibilities of national authorities to implement the ABS Policy; the need for free and prior informed consent, mutually agreed terms, and the sharing of benefits; intellectual property rights; genetic resources and the participation of associated stakeholders. The policy is accompanied by proposed Regulations on ABS of Biological Resources developed under the provisions of the Environmental Protection Act 1996 (No. 11 of 1996). The Policy is presently being reviewed by Government.

Biotechnology, Biosafety and Biosecurity Policy

A draft policy framework on biotechnology, biosafety and biosecurity has been developed for Guyana in 2006 in keeping with Guyana's obligations under the Cartagena Protocol and through a National Biosafety Framework Capacity Building Project.

The objectives of the policy are: (1) to guide the judicious use of modern biotechnology in Guyana for sustainable development in ways, which do not jeopardise human or environmental health including Guyana's biodiversity and genetic resources, and (2) ensure effective control of trans-boundary movement of GMOs or products thereby resulting from modern biotechnology through exchange of information and a scientifically based, transparent system of advance informed agreement.

The scope of the policy covers all GMOs and their products, all LMOs and all elements of genetic materials used in genetic manipulation and covers in detail: laboratory and field applications of biotechnology within Guyana; the fields of agriculture, environmental management, food/beverage processing, health and industry; the regulatory processes; the biotechnology research and development process; occupational safety at work places where biotechnology procedures are used or products handled; labeling of GMOs in feedstuffs and feeds sold in or imported to or through Guyana and any other measures to ensure public safety or health or environmental safety with respect to the use of biotechnology in Guyana or its neighbouring territory or waters. The policy also proposes a National Biotechnology and Biosafety Council to oversee and coordinate the implementation of the policy. At present, the draft policy framework is being considered by Government.

2.1.2 PLANNING

The planning framework is shaped by a number of strategies and sector plans some of which are in keeping with obligations of key Conventions including the CBD.

National Strategy for the Conservation and Sustainable Use of Guyana's Biodiversity

The National Strategy for the Conservation and Sustainable Use of Guyana's Biodiversity of 1997 identified the national position relating to biodiversity and laid the basis for the development of NBAP. Specifically, the policy recognises the multi-purpose value (agriculture, genetic, social, economic, scientific, ecological, cultural and aesthetic), and calls for, among other actions, the study and use of genes, species, habitats and ecosystems in an equitable and sustainable manner; the avoidance of waste or misuse of the resource; and the provision of opportunities for its sustainable management.

The general objectives of the Policy are to sustainably use Guyana's renewable natural resources, including biodiversity; to develop institutional capacity and capability to execute all aspects of environmental management, especially the management of biological resources; to integrate the conservation agenda into the national development agenda; to equitably share benefits which will arise from research, conservation and sustainable use of components of biological diversity; and to take all necessary actions to achieve these goals.

These policy objectives provided the broad framework for the development of the National Biodiversity Action Plan (NBAP). In essence, the National Strategy for the Conservation and Sustainable Use of Guyana's Biological Diversity became the critical point of reference for a number of national documents.

National Biodiversity Action Plan (NBAP 1999-2004*)*

The NBAP of 1999 represents a significant accomplishment in the planning process for the conservation and sustainable use of Guyana's biodiversity. The overall goal of the NBAP was *"to promote and achieve the conservation of Guyana's biodiversity, to use its components in a sustainable way, and to encourage the fair and equitable sharing of benefits arising out of the use of Guyana's biodiversity.'*

More importantly, the NBAP sets out to achieve several important objectives, with regards to the overall goals of the CBD. NBAP recognized biodiversity as an important national asset that offers the country manifold economic options. The basis of the productive sectors of agriculture, fisheries, forestry, and wildlife is biodiversity, in which the maintenance of diversity offers considerable opportunities and advantages.

Within the NBAP, national actions/programmes were outlined for implementation in order to comply with the UNCBD. These included Mobilization of financial and technical resources; Human resource and institutional capacity building; Research and information on biodiversity; Consolidation of policy, legal and administrative framework; Public awareness and education; *In-situ* and *ex-situ* conservation of biodiversity; Incentive measures and economic alternatives; Measures for the sustainable use of biodiversity; and, Monitoring, evaluation and reporting.

National Environmental Action Plan (NEAP 2001-2005)

The National Environmental Action Plan (NEAP 2001-2005) is a follow-on from the NEAP of 1994 which summarizes the national environment policy and focuses on coastal zone management, natural resources management including land resources, biodiversity, wildlife, forestry and ecotourism, waste management and pollution control, and mining. NEAP 2001-2005 identifies Guyana's commitment to sustainable development and provides a framework for integrating cross-sectoral environmental concerns into the wider context of Guyana's economic and social development programme and identifies and recognizes the roles and functions of relevant stakeholders including private sector and non-governmental organizations in environmental management. Specifically, the NEAP emphasises the critical importance of biodiversity conservation and management, and further identifies actions that should be taken at the national level to address this issue. Specific reference is made to the National Biodiversity Advisory Committee and the NBAP.

The National Forest Plan

The National Forest Plan (NFP) of July 1998 takes into consideration the National Forest Policy of 1997 and proposes a range of activities under five programme areas including land use, forest management, research and information, forestry training and education, and forest administration and governance. The Plan highlights the need for collaboration between the Forestry Commission and the National Biodiversity Advisory Committee and affiliated institutions and seeks to promote sustainable use and management of biological diversity in the forestry sector while promoting the development of guidelines for best practices.

The Integrated Coastal Zone Management Plan (ICZM)

This Plan, prepared in 2000, and approved by Government, recognises integrated coastal zone management as an ongoing process to promote the wise use, development and protection of coastal and marine resources; foster greater collaboration among sectoral agencies, and enhance economic development. The ICZM addresses policy development, analysis and planning, coordination, public awareness building and education, control and compliance, monitoring and measurement and information management.

Fisheries Management and Development Plan

An updated draft Fisheries Management and Development Plan has been prepared in 2006 for the management and regulation of Guyana's fisheries sector, including marine and inland freshwater ecosystems. The plan outlines a number of measures that should be taken. These include education and awareness, research and surveys and collaboration with sector agencies. The plan outlines considerations for a national fisheries policy, institutional framework, national standards, and code of practice. The plan is presently being considered by Government.

National Mangrove Management Action Plan and the Draft Code of Practice for Utilisation of Mangroves

The National Mangrove Management Action Plan was developed by the GFC, the Integrated Coastal Zone Management Committee, and the EPA in November, 2001 to guide the work of stakeholders involved in the utilization and protection of mangrove resources.

The overall objective of this plan is to foster a more coordinated approach in planning, policy formation, institutional cooperation and implementation of actions for mangrove management. The specific objectives of the Plan have positive implications for biodiversity conservation in Guyana, as it seeks to establish the administrative capacity of the management of mangroves in Guyana; promote sustainable management of the mangrove forest; obtain local community support in the management of mangroves; support research and development of Guyana's mangrove forest; and increase public awareness and education on benefits of the mangrove forests. The plan proposes specific actions, including review of policy and legislation, as well as zonation of mangrove forest to ensure protection; identifies main facilitators of the process; and outlines indicators and establishes time-lines.

As a follow-up to the plan, a draft Code of Practice for Utilisation of Mangroves was prepared in 2005 to: (1) conserve the mangrove resource for maximum benefit to humans (involving preservation, sustainable product harvesting and restoration); and, (2) to reduce activities that may lead to destruction or depletion of the resource.

2.1.3 INSTITUTIONAL FRAMEWORK

National Focal Point

The EPA has been designated as the National Focal Point for UNCBD and has overall responsibility for the coordination of all activities for the conservation of biological diversity and meeting the obligations of UNCBD. To fulfil its responsibilities regarding the conservation and sustainable utilisation of Guyana's natural resources, the EPA has created a Natural Resources Management Division (NRMD) comprising three Units: Biodiversity, Protected Areas, and Wildlife.

The National Biodiversity Advisory Committee

The National Biodiversity Advisory Committee (NBAC) is broad-based Sub-committee of the NREAC and comprises representatives from key natural resource agencies. NBAC provides advice on policies, strategies and programmes for biodiversity conservation, and reviews and approves research and bioprospecting proposals. The body is also expected to oversee the implementation of the National Biodiversity Action Plan and other actions in keeping with Guyana's obligations under the UNCBD.

Strategic Policy Mechanisms

The principal policy mechanisms for coordination of environment and natural resources management are:

1. Cabinet Sub Committee on Natural Resources and Environment - chaired by the Head of the Presidential Secretariat, this body deals with issues specifically related to policy regarding the utilisation and management of natural resources.

2. Parliament Sector Committee on Natural Resources – comprising representatives of Government and the Opposition, this Committee has responsibility for monitoring and oversight of line Ministries and Agencies involved in environment and natural resources management

3. Natural Resources and Environment Advisory Committee (NREAC) - chaired by the Prime Minister and coordinated by the Adviser to the President on Sustainable Development, the NREAC comprises heads of agencies and institutions in environment and natural resources management. It provides technical guidance to Cabinet on environment and natural resource policy and serves as a coordinating mechanism among sector institutions. The NREAC also provides guidance and information to the Parliament Sector Committee on Natural Resources through the Prime Minister.

The NREAC has three important sub-committees which are responsible for coordinating work related to the three UN Conventions to which Guyana is a signatory (UNCBD, UNFCCC, UNCCD). These committees are the National

Biodiversity Advisory Committee (NBAC); National Climate Committee (NCC), and National Steering Committee for UNCCD. NBAC meets on a regular basis while the NCC has recently been re-organized for wider stakeholder involvement, and the National Steering Committee for UNCCD meets periodically.

At the project level, steering and oversight committees are usually established to allow for wider stakeholder input, involvement and participation in shaping the process and outputs. Among these have been the National Biosafety Committee; Project Steering Committee for the NCSA, and the Oversight Committee to the ABS Project.

2.1.4 LEGISLATION

Guyana's legislative framework as it relates to biodiversity comprises several pieces of legislation which provides mechanisms to: (i) govern the sustainable use and management of biological resources; (ii) regulate access to land; (iii) address issues related to the use of pesticides and toxic chemicals; (iv) control international trade in wildlife; (v) regulate access to genetic resources and create benefit-sharing regimes for their use; (iv) promote the conservation of flora and fauna; and (viii) the overall management of the environment.

Principal legislative instruments include the Environmental Protection Act (1996) and Regulations under the Act such as the Species Protection Regulation (1999), Regulations on Hazardous Waste Management, Water Quality, Air Quality and Noise Management (2002); the Pesticide and Toxic Chemicals Control Act (2000) and accompanying Pesticides Regulations (2001); and, the Fisheries Act (2002).

New legislation and Regulations are being developed and include a new Forest Bill, Aquaculture Bill, draft Regulations for ABS, and Biosafety.

2.1.5 INTERNATIONAL CONVENTIONS AND TREATIES

Guyana's obligations relating to biological diversity derive from biodiversity-related Conventions to which it is a signatory. Principal among these are:

- United National Convention on Biological Diversity (signatory in 1992, ratified in 1994);
- Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) (ratified in May 27, 1977);
- International Plant Protection Convention; and
- Convention concerning the Protection of the World Cultural and Natural Heritage (World Heritage 1975).

In addition to biodiversity-related Conventions, Guyana is also a signatory and has acceded to the following:

- Kyoto Protocol;
- Rio Declaration on Environment and Development;
- Montreal Protocol (Guyana's obligations to phase out Ozone Depleting Substances);
- United Nations Convention on the Law of the Sea (ratified by Guyana in 1993);
- United Nations Framework Convention on Climate Change (UNFCCC) (signed in June, 1992, and ratified in August, 1994);
- United Nations Convention to Combat Desertification (UNCCD) (signed in December, 1996, and ratified on September 24, 1997);
- International Convention for the Prevention of Pollution (MARPOL 73/78) (acceded on December 10, 1997);
- International Plant Protection Convention (adopted in August, 1970);
- Vienna Convention for the Protection of the Ozone Layer; and
- Basel Convention on the Control of Trans-boundary Movement of Hazardous Wastes and their Disposal (acceded in 2001);

Guyana participates in the following for which instruments of accession are still being awaited:

- Convention on Wetlands (Ramsar); and
- Convention for the Production and Development of the Marine Environment in the Wider Caribbean Region and its Protocols (Cartagena Convention).

2.1.6 REGIONAL PROGRAMMES

Within the Caribbean and Latin America, Guyana is a member or official signatory to the following:

- Caribbean Planning for Adaptation to Climate Change (CPACC);
- Mainstreaming Adaptation for Climate Change (MACC);
- Caribbean Regional Environment Programme (CREP);
- Caribbean Environment Programme (CEP, 1981) and its Specially Protected Areas and Wildlife
- Programme;
- Latin American Network for Technical Co-operation in National Parks, Protected Areas and
- Wildlife (LAN-NPPAW);
- Treaty for Amazon Co-operation (TAC, 1978) and associated projects on biodiversity and protected areas with ACTO;
- Barbados Plan of Action (BPOA) and Mauritius Strategy and its Programme for Small Island Developing States (SIDS); and
- Guiana Shield Initiative (UNDP/IUCN funded).

3. OBJECTIVES AND APPROACH OF NBAP II

3.1 OBJECTIVES OF NBAP II

The *National Strategy for the Conservation and Sustainable Use of Guyana's Biodiversity* of 1997 identified the national position relating to biodiversity and laid the basis for the development of NBAP. The general objectives of the National Policy on Biodiversity (from *National Strategy for the Conservation and Sustainable Use of Guyana's Biodiversity, 1997)* are:

- to sustainably use Guyana's renewable natural resources, including biodiversity;
- to develop institutional capacity and capability to execute all aspects of environmental management, especially the management of biological resources;
- to integrate the conservation agenda into the national development agenda;
- to equitably share benefits which will arise from research, conservation and sustainable use of components of biological diversity; and
- to take all necessary actions to achieve these goals.

These policy objectives provided the broad framework for the development of the National Biodiversity Action Plan (NBAP) with the following goal and objectives:

Overall Goal: To promote and achieve the conservation of Guyana's biodiversity, to use its components in a sustainable way, and to encourage the fair and equitable sharing of benefits arising out of the use of Guyana's biodiversity.

Objectives:

- Evaluate the state of capacity nationally to achieve the above goal;
- Identify gaps and needs relating to achieving the above goal;
- Propose actions to achieve this goal and close the gaps;
- Develop activities in a number of priority areas relating to the overall goal;
- Identify the roles and responsibilities of the various stakeholder groups in the implementation of the plan;
- Obtain and harness stakeholder involvement and support for the development and implementation of the plan; and
- Increase public awareness of biodiversity.

NBAP II should not be seen as the development of a new or separate plan from NBAP, but rather a continuation of the planning process within the framework provided by the overall goal and objectives of NBAP, guided by the recommendations of the Fuentes Review Report and with focus on four main thematic areas of forests; agriculture; coastal resources, and marine and freshwater resources.

3.2 APPROACH TO NBAP II

The development of the first National Biodiversity Action Plan followed a participatory process of stakeholder consultation and involvement. This approach was maintained in the preparation of this second phase of the NBAP (2007-2011).

The first NBAP identified key programme areas to be implemented in two phases over the period 1999-2004. The programme areas were based on themes which focused on essential priority interventions that aimed to build a foundation for the conservation and sustainable use of biodiversity through the filling of existing gaps, capacity building, and promoting awareness of the country's biological resources. One of the activities in the consolidation programmes of the NBAP was undertaking an evaluation of the programme areas in the Plan to identify the achievements and set-backs, and to plan for a second action plan – National Biodiversity Action Plan II (2007-2011).

Following the NBAP review and recommendations made by Fuentes (2005), the EPA identified the approach to the preparation of the second phase of the NBAP with focus on four key thematic areas of forests, agriculture, coastal resources and marine and freshwater resources. The effort was led by a Technical Team of local specialists commissioned by the EPA with funding support from World Wide Fund for Nature (WWF) and completed over a period of four months.

The process began with the preparation of a Situation Analyses for each of the thematic natural resource areas: forests, agriculture, coastal resources, and marine and freshwater resources. These Analyses addressed the physical, biological, work-programmes and macro-variables of each Thematic Area and identified Programme Areas and activities in order to meet the UNCBD obligations.

A national workshop was held on March 1, 2007 with participation from a broad range of stakeholders from different sectors and representing several regions of the country. At this workshop, the Technical Team presented the findings from the Situation Analyses and discussed with stakeholders key Programme Areas for action. These Programme Areas were listed and categorised as high or medium priorities.

With guidance from the EPA, the National Biodiversity Action Plan II (2007-2011) was prepared with an elaboration of identified Priority Programme Areas into Project Concepts and Log Frames.

The process for National Biodiversity Action Plan II (2007-2011) preparation has maintained stakeholder participation and input through the national workshop and stakeholder discussion forum as well as direct engagements with the consultant team and EPA.

4. SITUATION ANALYSES

As a first step towards developing NBAP II, a comprehensive Situation Analysis was undertaken for four key thematic natural resource areas:

1. Forests.
2. Agriculture.
3. Coastal Resources.
4. Marine and Freshwater Resources.

The Analysis addressed the physical, biological, work-programmes and macro-variables of each Thematic Area with focus on:

1. The provisions within UNCBD for each thematic area.
2. The UNCBD Programme of Work for each thematic area.
3. The extent to which the first NBAP addressed each thematic area.
4. The present context of the thematic area in relation to biodiversity.
5. Guyana's progress in implementing the Work Programme for each thematic area.
6. Key actions needed within each thematic area in order to improve the focus on biodiversity.

The following is a summary of the Situation Analyses, Findings and Recommendations. Annex II outlines Guyana's progress in implementing the Work Programme for each thematic area.

4.1 FORESTS

4.1.1 UNCBD AND FOREST BIODIVERSITY

The UNCBD addresses forests directly through the expanded programme of work on forest biological diversity (annex to decision VI/22), adopted in 2002 by the Conference of the Parties at its sixth meeting. The expanded programme of work recognized that it should be implemented by Parties in the context of their national priorities and needs, and that activities implemented domestically will be prioritized based on country and regionally specific needs. COP further pointed out that inclusion of an activity in the work programme does not mean that this activity is relevant to all Parties.

The expanded programme of work on biological diversity consists of 3 programme elements (Conservation, Sustainable Use and Benefit-Sharing; Institutional and Socio-Economic Enabling Environment; and, Knowledge, Assessment and Monitoring), 12 goals, 27 objectives and 130 activities.

4.1.2 FORESTRY WITHIN THE GUYANA NATIONAL DEVELOPMENT CONTEXT

4.1.2.1 Forest Biodiversity

Tropical forests cover some 16.4 million ha of Guyana or about 76% of the total land area. Though total biodiversity in the Guiana Shield does not reach levels found in the forests of the Amazon basin, the forests of Guyana are valuable reservoirs of biodiversity. Their value is enhanced by the fact that a high proportion is pristine (the forests of the Guiana Shield have been recognised as one of the last remaining "frontier forests" of the world), they contain many animal and plant endemics (it is estimated that 5% of all flora species in Guyana are endemic), they provide numerous habitats for wildlife, and they are an integral part of the country's freshwater ecosystems.

In addition to their intrinsic bio-physical value, the forest also provides a resource of immense economic potential that can be sustainably utilised.

In response to the multiple values of the forest resource, a number of key stakeholder organisations exists that covers the regulation, commercial exploitation, socio-economics and conservation in Guyana. The forest sector is, then, broader than those involved in commercial exploitation alone.

4.1.2.2 Historic Patterns of Forest Resources Utilisation[1]

Commercial forest exploitation must have started soon after European settlement, because by 1624, there was already established a barter trade between the colonists and the Amerindians for letterwood. The cutting and export of this wood completely dominated the timber trade until the latter part of the 18th century.

The beginning of the 19th century saw the establishment of an export trade in hewn greenheart squares. The first sawmill was established about this time and sawn greenheart baulks were exported. By then, a lucrative export trade in balata (the coagulated latex obtained from tapping the bulletwood tree) was well established.

In 1925, when the National Forest Service known as the British Guiana Forest Department was established, the pattern of timber exploitation and utilisation was well-entrenched. Greenheart hewn squares, piles and large-sawn baulks were exported in response to orders for specific sizes and lengths. Thus, the forest operations were highly selective. Greenheart was used locally in house-building but mostly as framing, since lumber for flooring and cladding was unseasoned and poorly machined. Imported North American pine was used for the better houses and there was little utilisation of other species.
The fledgling Forest Department saw as its main tasks the utilisation and marketing of timber; improving the quality of lumber sold on the domestic market; consolidating and regulating the export greenheart market; introducing a wider range of species, the so-called lesser known or lesser used species, into that market and the local market.

4.1.2.3 Impact of Historic Logging Practices on the Forest Ecosystems

The patterns of exploitation established over the past 150 years, and their effect on the forest resource, may be characterised as follows:

- Selective logging of a few species to fill specific orders. This is particularly the case with greenheart and purpleheart where felling is often done in response to specific export orders. Since this "cutting to order" approach is highly selective, it makes little apparent impact on the forest canopy. However, this systematic concentration on certain species and very light cuts gradually skews the ecosystem balance and tends to favour the regeneration of certain species, particularly pioneer species, and not others.
- Additionally, the "cutting to order approach" also meant that repeated entries to a particular site may be made within a relatively short time span. The consequent logging damage to regeneration would, given enough time, lead to significant changes in the species composition of the forest and a gradual erosion of its economic value as it looses its more commercially valuable species.
- The exploitation on a sustainable basis of a non-timber forest product, balata. The export of balata rubber was a significant source of foreign exchange until it was substituted in the marketplace. Detailed regulations were applied to ensure that only mature trees were tapped using procedures that allowed a sustained yield over time.
- The intensive exploitation of wallaba forests on accessible white sand soils. Wallaba forests are unusual for tropical forests, in that they are characterised by the dominance of two species: soft wallaba and ituri wallaba. The trees with the best forms are converted to transmission poles for the local and export market. Other wallaba trees are used to make fence posts and staves (and in former years, vat staves) and roofing shingles.
- Finally, firewood-cutting and charcoal-making utilise the remaining suitable timber. When frequent and heavy harvests are followed by the repeated setting of wild fires, these forests degrade to a worthless scrub. In fact, areas closer to the coast that have been exploited over the past 150 years, carry a mosaic of vegetation ranging from closed high forest to open scrub land, depending upon the intensity of exploitation and the frequency of wild fires. If wildfires can be completely eliminated, the exploited areas will slowly regenerate.

The forests that lie outside the State Forests (about 40% of the total forest area of the country) are pristine, except for wallaba forests next to the coastal plain that have been subjected to intensive exploitation over the past 100 years. By

[1] Parts of this section are extracted from the NDS.

and large, they do not carry commercial stands of greenheart. This, and the fact that they are mainly situated a considerable distance from the coast, or that they occur in difficult terrain, has kept many of them pristine.

4.1.2.4 Forestry Sector Today

State forests administered by the Guyana Forestry Commission (GFC) account for about 13.6 million ha (63% of the land area). By 2004, 52% of state forest had been allocated for timber harvesting. In addition to state forests, a portion of the national forests are under titled Amerindian lands. Land titles were issued to Amerindians from 1976 onwards and currently approximately 13% of the total land area of the country is under titled Amerindian land (an estimated 1.4 million ha of which is covered by forest).

Access for commercial timber removal on State Forests is controlled by the GFC through the allocation of temporary concessions and permits as follows:

- Timber Sales Agreement (TSA) covers concessions of more than 24,000 hectares and is allocated for a period of more than 20 years.
- Wood Cutting License (WCL) is issued for 3 to 10 years, and covers forests of between 8,000 and 24,000 hectares.
- State Forest Permissions (SFP) are given for two years and cover areas of less than 8,000 hectares. SFPs are generally issued to individual small-scale operators and community-based associations.
- State Forest Exploratory Permits (SFEPs), which are issued for survey and feasibility purposes only and do not include cutting rights.

Since 1991, the number of TSAs has almost doubled from 16 in 1999 to 31 in 2005. During the same period, the number of SFPs has declined from 571 to 263.

Guyana's commercial forests are characterised by high species diversity but the main commercial species have a low standing volume per unit area which results in low volume extraction per unit area. It has been estimated that in 2000, the total annual wood production of 400,000 m³ came from a forest area of some 6 million hectares, equating to less than 0.1 m^3/ha overall (though since a significant portion of the allocated area is not active in any given year, actual average increment is probably higher). The reasons for the low productivity can be found in the relatively poor forest soils typical in the country; the highly selective nature of logging (targeting less than 5% of the tree species occurring) and the relatively high occurrence of defective trees (estimated at more than 20% overall).

Log production has shown considerable fluctuations over the past decade, peaking in 1997 at 521,529 m^3 and falling to 288,534 m^3 by 2000. The latest figures (2005) indicate a slight resurgence to 312,688 m^3. Data for the production of sawn lumber from static (and now including mobile) sawmills are not officially available post-1997. At that time, production was 56,604 m^3/yr. Statistics have been collected for chainsawn lumber since 1994 when annual production was recorded at 29,832 m^3. Since then, production has remained relatively steady and after a slight decline in 1998-1999 is was up to 36,085 m^3 in 2004 and 36,176 m^3 in 2005.

Approximately one half of total timber volume production is currently exported from Guyana. The most common destinations are Asia (in particular for logs), Europe (especially sawnwood to UK), the Caribbean and North America. The average annual volume of logs exported between 1995 and 2000 was 42,935 m^3 and average sawnwood export for the same period was 19,716 m^3. In 2004, export volumes for logs and sawnwood, respectively, were 61,255 m^3 and 39,046 m^3.

Between 1988 and 1993, forestry contributed just over 2% to Guyana's Gross Domestic Product (GDP) but between 1997 and 2004, it averaged 3.73% with an all-time high of 4.93% in 1997. In 2004 (the latest available), the contribution was 3.29% (these figures are for production and primary processing only and do not include secondary processing, plywood or furniture manufacture). The most recent published data indicate a contribution of around US$ ¾ million to the consolidated fund directly from royalties (not including the area-based acreage fees).

The total value of exports of all logs, sawnwood, roundwood, splitwood and plywood between 1997 and 2004 was US$251 m with an annual average of US$31.5 m, peaking in 2004 at US$41.6 m. In 2005, total export earning from the sector was US$46.3 million. The latest official figures, from 1997, indicate that 13,979 persons are directly employed in the timber and forest products production sector.

In recent years, there has been a marked increase in the use of chainsaws for the production of lumber on State Forests in Guyana. Chainsawn lumber production is also common on private lands especially Amerindian reservations.

Guyana has been placing, over the past five years, increasing emphasis on ensuring that forests are managed in a manner that ensures sustainability and legality. This focus is reflected in the work plan of the GFC, specifically in the work plan in planning, forest resources management as well as forest monitoring. The Planning Division, in addition to local initiatives, has been working with ITTO and other international bodies to strengthen forest activities in keeping with international and regional Forest Law Enforcement, Governance and Trade (FLEGT) initiatives. This Division of the GFC is currently coordinating a project on FLEGT, which is in the completion phase. The project aims at conducting an Audit of the log tracking system which Guyana has in place.

Additional work is also being done to strengthen GFC's capability to manage the State Forest estate in keeping with the Forest Laws of Guyana. The Forest Resources Management Division of the GFC has been intensively involved in planning concession boundaries, assessing forest management plan and annual plans of operations, assessing the proposed formation of forest roads and other related areas. Current assessment and reviews are however, limited to manual verification and scanned images from previous years. These are not as accurate and effective as the GFC would have preferred them to be to conduct its forest management work. Planning in these areas will be greatly aided with updated information to enhance the forest monitoring capability.

An important part of the work plan of the Forest Monitoring Division of the GFC focuses on environmental and general monitoring of forest activities in and around forest concessions, throughout the chain of custody of forest produce. This includes managing the log tracking system and associated documentation systems involved in forest activities. Log tag numbers are currently being used to identify each piece of timber produce produced by a concession.

4.1.3 FORESTRY AND GUYANA'S NBAP

The NBAP addressed forest biodiversity in a number of areas. In the overview and assessment, the importance of forests to biodiversity and economy was recognized and several potential threats to forests were identified (such as large-scale selective logging of certain species, fuel wood collection in natural forests, unregulated chainsaw operations, conversion to agriculture and other uses, and unregulated exploitation of forest resources in Amerindian communities).

The policy and legislative environment was considered to be relatively good in the forestry sector (with a national plan, a national policy, an action plan and draft legislation) though it was acknowledged that, in keeping with other sectors, there was a weakness in human resources in the regulatory sector. It was noted that forestry can have impacts on freshwater ecosystems, that there is a potential for introduction of harmful alien species, and that there is a need for work on genetics of important wild tree species. Training and research activities are important to the sector and forestry has a critical role to play in broader land-use planning.

In the discussion of the national vision for biodiversity, it was recognized that forestry has a pivotal role in ecosystem management and that the sector had set a good example in policy, planning and development of guidelines for best practice. As part of the proposed programmes in biodiversity, specific forestry-related activities were restricted to just 3 projects, namely, project 3 ("adopt-a-forest" as a means to raise revenue), project 25 (development of criteria and indicators for sustainable use of biological resources) and project 28 (round table meetings with forestry sector to discuss the NBAP).

4.1.4 FORESTRY AND BIODIVERSITY IN GUYANA

4.1.4.1 Potential Threats to Forest Biodiversity

Many potential threats to forest biodiversity have been recognised, especially by the NBAP and a recent stocktaking of Guyana's achievements towards the UNCBD. Among these threats are:

- indiscriminate and/or unsustainable mining and logging practices;

- habitat loss and destruction;
- increased accessibility to and economic activities in hinterland areas;
- poverty in both rural and urban areas and limited income generating activities to support sustainable livelihoods;
- global climate change;
- inappropriate use of agro-chemicals;
- introduction of alien invasive species;
- natural disasters such as floods and droughts;
- fuel wood collection in natural forests;
- unregulated chainsaw operations;
- conversion to agriculture and other uses;
- unregulated and unmanaged exploitation of forest resources in Amerindian communities; and
- indiscriminate burning.

At the highest level, there is recognition of the importance of the forestry sector, not only in terms of its productive value, but also the important ecosystem functions they provide.

4.1.4.2 Policy, Legal and Regulatory Framework – Forest Sector

Policy Framework

National Forest Policy/National Forest Plan

The Guyana National Forest Policy Statement of 1997 recognises that sustainable forest management can be attained only if there is the availability of sufficient basic information on which planners and forestry practitioners might draw for the formulation and implementation of policies and strategies. In addition, the Policy highlights the importance of a level of control over all harvesting activities, sufficient to provide adequate protection of biodiversity and to ensure sustainable production; and the creation and maintenance of an efficient database, containing up-to-date information which is freely available to all, without compromising confidentiality, on national forest resources, their productivity, management potential, and their ecology and dynamics; and the development of an environmental management system for the forestry sector which would address the environmental and social impacts of any activity within the forest and build strategies to minimize them. The Policy further outlines the importance of sustainable forest management and management of forest concessions issues to ensure the legality and sustainability of forest activities.

Objectives of the national forest policy relating to biodiversity are:

- The conservation, protection, management and utilisation of the nation's forest resources, while ensuring that the productive capacity of the forests for both goods and services is maintained or enhanced; and
- Achieve improved sustainable forest resource yields while ensuring the conservation of ecosystems, biodiversity, and the environment.

Central policies adumbrated in these documents, as they relate to the environment, are:

- creation of inviolate reserves of representative samples of the various forest ecosystems which occur in the country, on a scale which is adequate to ensure their indefinite reproduction and continuation, having regard to their biodiversity;
- initiate a level of control over all harvesting activities, sufficient to provide adequate protection of biodiversity and to ensure sustainable production;
- achieve improved sustainable forest resource yields while ensuring the conservation of ecosystems, biodiversity, and the environment; and
- a national and global responsibility for the sustainable management of Guyana's tropical rain forests and recognise its vital role in maintaining the earth's climate and eco-systems.

Legal and Regulatory Framework

The current Forest Act of 1953 does not speak of conservation or biodiversity, though it does contain reference to forest protection from fire and other unnecessary damage in removal of produce.

The Draft Forest Act includes the following provision relating to biodiversity: "the conservation of the forests of Guyana, including measures to conserve biodiversity, special species and habitats, soil and water resources, and to protect forests against pollution, fires, pests and diseases".

The following legislative instruments impact on forest biodiversity:

- Amerindian Act No. 6 of 2006;
- Amerindian Land Commission CAP 59:03;
- Animals (Control of Experiments) Act CAP 71:03;
- Balata Act CAP 69:03;
- Environmental Protection Act, Act No. 11 of 1996;
- Export of Timber Act CAP 67:02;
- Food and Drugs Act CAP 34:03;
- Forests Act CAP 67:01;
- Kaieteur National Park Act (Cap. 20:02 and amendments, Act 41 of 1929, amended by Act 4 of 1972, further amended in 1999 and 2000);
- Iwokrama Act (1992); and
- Mining Act (Act 20 of 1989, Act 34 of 1920 and amendments).

The Guyana Forestry Commission (GFC) was created in 1979 out of the pre-existing Forest Department that had its origins in 1925. The GFC is responsible for advising the responsible Minister and making submissions on issues relating to forest policy, forestry laws and regulations. The Commission is also responsible for administration and management of all State Forest land. The work of the Commission is guided by a national forest plan that has been developed to address the forest policy. The Commission also develops and monitors standards for forest sector operations, develops and implements forest protection and conservation strategies, oversees forest research, and provides support and guidance to forestry education and training.

The GFC is responsible for the management of an area of 13.6 million ha classified as State Forest. The remainder of the forest is either: State Land; Amerindian Land; or other private property. Forest Concessions are allocated in three categories based on area and contractual length (see above), All operations are strongly encouraged to follow best practice as set out in the Code of Practice for responsible forest operations (though this will not become mandatory until the passage of the new draft Forests Act).

The President of Guyana is the ultimate authority for Forestry (and the Environment and Natural Resources) though the Minister for Agriculture currently has the responsible mandate.

Revised forestry legislation has been drafted to address, *inter alia*, conservation and protection, sustainable utilisation of the forest estate and Amerindian land rights. The draft is currently with Cabinet for approval.

The Environmental Protection Agency (EPA) was established in 1996 to provide for the management, conservation, protection and improvement of the environment, the prevention or control of pollution, the assessment of the impact of economic development on the environment and the sustainable use of natural resources. The EPA has entered into a Memorandum of Understanding with the GFC that provides for co-operation in the assessment and monitoring of Environmental Impact Assessment. Before any operation can commence in a forest concession, the company must submit an Environmental Impact Assessment for approval by the EPA and the GFC. The GFC has also established an Environmental Monitoring Unit to monitor all environmental matters pertaining to forestry.

The Forest Producers Association is an NGO formed in 1944 by the forest industry to promote and develop the interests of the forest sector and to collaborate on activities such as training, information, public awareness and institutional development. Membership is open to all individuals or companies engaged in any aspect of the business of forest products and it currently has over 60 members. The Association does not receive a subvention from any source and relies on membership fees to conduct its business. This being so, the only paid members of staff it employs are an executive director and a personal secretary. The Association is currently receiving some support from multi-lateral international bodies to conduct sectoral training and to develop a strategic plan. The association is a member of the Public Sector Commission.

4.1.4.3 Initiatives Addressing Forest Biodiversity

Since the inception of the NBAP in 1999, there have been many projects in the forestry sector, under several lead agencies, that have directly or indirectly addressed issues of forestry biodiversity. Implementing and funding organisations included GFC, FTCI, Iwokrama, CIG, Tropenbos Guyana, WWF as well as some private entities. The following is a summary:

Guyana Forestry Commission

Strengthening Participatory Approaches in Forest Management in Guyana (2002-2005), funded by the Food and Agriculture Organisation of the United Nations, promoted the adoption by Government and other natural resource managers of "best practices" for integrating participation in natural resource management for poverty reduction.

The Guyana Forestry Commission Support Project (1995-2002), funded by the UK Department for International Development, enabled the GFC to effectively fulfil functions in support of sustainable, ecologically sound and socially integrated forest management systems. The goal was to optimise the economic and environmental goods and services from Guyana's forests for the benefit of all communities. Project outputs included a revised national forest policy and law; strengthened GFC structure and functioning; strengthened GFC procedures and capabilities; strengthened forest sector training capacity, and improved forest information systems.

The Canadian International Development Agency has also provided funding towards the execution of a national forest inventory.

The forestry sector has participated in the development of the Treaty for Amazon Co-operation (TAC) project 'Criteria and Indicators for the Sustainability of the Amazon Forest'. The TAC criteria and indicators, together with those produced by CIFOR and ITTO have been reviewed by the GFC during the preparation of the National Forest Plan. Actions required by the sector have been identified for all appropriate indicators and these have been incorporated into the Plan.

The GFC has secured funding from the UNDP to assist in the development of national standards for certification. The objective is to develop standards that comply with all criteria and indicators. The process will also seek to involve and develop the interest of potential local certification agencies so that certification services become available at acceptable cost to producers. UNDP funding has also been made available for a comprehensive study of existing harvesting operations to determine the main obstacles to improved forest management and certification. The results of this study will be used to design further interventions that may be required to assist the introduction of sustainable forest management systems.

The GFC is involved in a number of activities to promote more involvement and participation in the forestry sector. These are:

- Educational outreach programmes to Amerindian and hinterland communities;
- Sponsorship of five Amerindian students annually to pursue a certificate in forestry;
- Outreach programmes to secondary schools, educating students about all aspects of forestry and the environment; and
- Support for the University of Guyana to run a Diploma, Degree and Master programme in Forestry.

The GFC also undertook research studies on a monograph of wallaba in Guyana (2004), investigating logged wallaba forests in Guyana (2004), and commercial utilization of ite palm for the production of tibisiri (2004).

Forestry Training Centre Inc.

Training in Reduced Impact Logging in Guyana: 2002- . Funded by ITTO, the specific objective of this project is to strengthen the national capacity to deliver training in practical forest operational and managerial skills and knowledge to personnel at all levels of the forest sector by means of establishing an on-site RIL training programme. The project includes the following major activities: the design of the training programme in consultation with stakeholders, the development of demonstration models of good RIL practices, the establishment of the training facility, the training of

trainers and other personnel in RIL, and the establishment of a long-term plan to ensure the sustainability of the project. One outcome of the project is the Forest Training Centre Inc. which is now co-funded by WWF.

FTCI's main focus to date has been the development of local timber harvesting technologies and practices that promote the conservation of forest and the training of field operatives to carry out such practices. A fundamental aspect of the technologies and practices developed is the conservation of the forest environment and its diversity by:

- restricting the size and number of forest gaps;
- implementing directional tree felling that limits damage to residual forest stock;
- carrying out proper planning of the alignment and construction of skid trails and log markets;
- ensuring the economical use of heavy-duty machines; and
- ensuring the conservation of water courses by restrictions on logging on the margins of water courses.

Iwokrama International Centre

The Iwokrama International Centre for Rainforest Conservation and Development is responsible for the management, conservation and sustainable development of 371,000 ha tropical rainforest, which the Government of Guyana dedicated to the international community to demonstrate that tropical forests can provide economic benefits without destroying biological diversity.

A Sustainable Management Model in the Iwokrama Rain Forest: 1999-. Funded by ITTO, the objective of the project is to design, plan and initiate the commercial management of half of the Iwokrama Forest for multiple products and services, and integrate research, training and demonstrations into these operations, in order to improve the practices in Guyana and elsewhere. The project helps Iwokrama produce a state-of-the-art forest management plan for multiple products and services, and feasibility studies for management and harvest based on this plan. It assists in finding an appropriate business partner and negotiating contracts that will assure the adherence of principles of sustainable forest management. Demonstration, research and training in improved practices will be integrated into these model commercial operations.

The specific objectives are to:

- manage the area in order to maximize net revenue from sustainable production of forest goods and services, while developing local employment and training opportunities and providing capacity building and technology transfer programmes for the Amerindian communities; and
- to demonstrate, through effective monitoring, how the approach adopted is delivering lasting ecological, economic and social benefits to local, national and international communities.

The main outputs are:

- training and technology transfer in the development and implementation of silvicultural programmes provided;
- fire management plan prepared and training in implementation practices provided;
- training and technology transfer in operational practices related to forest management provided;
- forest management and silviculture counterparts trained;
- monitoring programmes developed and implemented to evaluate the social and economic impact of the forest management activities on the local Amerindian communities; and
- additional monitoring programmes developed to evaluate the biological impacts of forest use on wildlife populations.

Tropenbos (Guyana)

The Tropenbos-Guyana Programme (TGP) was a forest research programme that started in 1989, with core-funding of the Dutch government. The objective of this research programme was to achieve an understanding of the lowland tropical rainforest ecosystems in the area to such a degree that timber harvesting (and possible other non-wood forest products) under a sustainable forest management system can be achieved. At the same time, a satisfactory level of biological diversity should be maintained and an appropriate area of rainforest conserved. The programme included forest management-oriented research and training programmes. Notable contributions included a range of technical

publications. The TGP ended in December 2001 though continued accessibility to its assets, knowledge and expertise and continuation is facilitated by the Planning and Research Development Division of the GFC.

NGOs

Guianas Sustainable Forest Resources Management Project (2002-ongoing), funded by WWF-Guianas, aims at maintaining the integrity of the different forest ecosystems of the Guianas so that they may sustain their ecological functions and processes while supporting the region's socio-economic development. The four project components are: sustainable forest management; gold mining pollution abatement; protected areas effective management; regional integration, collaboration and networking.

Conservation International (Guyana) has been involved in many initiatives related to forest biodiversity and conservation in recent years including the establishment of 80,000 ha Conservation Concession and promotion of carbon credit scheme for Guyana; development of biodiversity corridor from the Roraima/North Pakaraimas to Southern Guyana through Iwokrama Forests, Kanuku Mountains and the Conservation Concession; development of management plan for the 625,000 ha Wai Wai community owned conservation area in Konashen District, Southern Guyana, using fully participatory approaches; rapid biological assessments in the Kanuku Mountains and Southern Guyana; and a floristic survey in the Conservation Concession.

Other Agencies

The Natural Resources Management Project (1998-), funded by the German Government, was designed to ensure that decision-making for natural resources management is based on improved information. The project will develop a database on natural resources, establish land use planning procedures, prepare policy guidelines and legislation for natural resources management and strengthen institutional capacity.

The proposed National Protected Areas System Project will assist the GoG with the establishment of a representative system of protected areas, which will also conserve globally important biological diversity. The project has initiated the process of establishing a protected areas system by identifying and supporting the management and development of two pilot areas. The system will contribute to the conservation of ecosystems and biological diversity, watershed protection, and the maintenance of the country's cultural heritage. Project components include the design and identification of a Protected Areas System and selection of protected areas; supporting the management and development of two pilot areas; institutional strengthening and training; legislation and policy development; and, the identification of long-term sources of financing.

Private Sector Initiative

Several companies have indicated an interest in pursuing FSC Certification which would ensure that environmental management is of an international standard and that forest biodiversity issues are at the forefront of a forestry company's operational planning.

Comparing progress against the expanded Programme of Work for Forest Biodiversity indicates that many initiatives have directly or indirectly addressed the objectives of the Programme.

Analysis of stakeholder responses provides a synopsis of the current situation and allows identification of shortfalls within the NBAP programme areas. One clear message is that little has been done specifically to address the programme areas in the NBAP, and in the forestry sector, the NBAP has not provided an effective strategic or fund-raising tool. Activities that have been undertaken in the sector that interface with biodiversity conservation have been done so apart from the NBAP.

It is a recognised failing of the NBAP process that resources were not sufficiently directed or utilised at mainstreaming biodiversity conservation in organisations strategic and operational planning. To be successful, NBAP II must address this issue and ensure that timely interventions occur that allow organisations to incorporate biodiversity issues in their own planning cycles. Technology transfer is an area that is also underutilised and duplication of scarce technological resources commonly occurs.

4.1.5 GUYANA'S PROGRESS ON THE UNCBD FOREST BIODIVERSITY WORK PROGRAMME

Annex II-A provides a status of Guyana's efforts to implement activities as part of the Forest Work Programme. It is recognised that many of the achievements have been through initiatives within the sector and not necessarily as a part of NBAP.

4.1.6 IMPROVING THE FOCUS ON BIODIVERSITY WITHIN FORESTRY

This Situation Analysis exercise has revealed that that in the forestry sector, the NBAP has not provided an effective strategic or fund-raising tool. Activities that have been undertaken in the sector that interface with biodiversity conservation have been done so apart from the NBAP. The following are some key interventions for improving the focus on Biodiversity within the forest sector:

Mobilising of Financial and Technical Resources

Stakeholders felt that a much more coordinated approach needs to be adopted to seeking and securing funding, and mobilising resources. The Ministry of Foreign Affairs has an important role to play that has been generally underutilised. Representatives from the Ministry are in an ideal position to lobby at various international fora and present a coordinated portfolio of project requests to potential donors.

Human Resources and Institutional Capacity Building

The capacity for training within the forestry sector is actually quite good with the established training centres (UG and GSA), the relatively new private/GFC supported FTC, and the community-based initiatives of Iwokrama, CI and GFC. However, these resources are generally felt to be underutilised by the forest industry in particular. Also, the coverage of forest biodiversity issues within curricula of established training centres should be reviewed.

Research and Information on Biodiversity

There is a need for a more coordinated approach to research and development in the forestry sector generally. Some approaches have been taken to achieve this but with limited success. A lead agency, perhaps GFC with the support of UNDP, should coordinate research requirements (updated on a regular basis as new issues arise) and potential funding.

Consolidation of Policy, Legal and Administrative Framework

There is a need for review of the policies and plans that directly relate to forest biodiversity and it is widely felt that the new forestry legislation is long overdue. The lack of coordinated national land-use planning is detrimental in many areas and can have direct impacts on the ability of the nation to meet its obligations in several areas related to forest biodiversity.

Synergies among institutions and among related UN Conventions are not fully exploited. At the international level, measures such as ensuring institutional structures must be goal-oriented and goal-specific, supporting the link between national priorities and institutional arrangements, improving the enabling environment (appropriate framework legislation, delegation of authority, and leadership at the highest levels), ensuring adequate human capacity and institutional structures at the regional and community levels.

Synergies among related Conventions can be improved by encouraging collaboration among national focal points as a key to fostering synergy at the national level through formal networks and technology transfer at both the Secretariat and national levels through sharing of experiences, information, and identification of technologies of joint interest and relevance.

Public Awareness and Education

Public awareness of forest biodiversity issues was felt to be rather poor and greater coordinated efforts should be made in the future. As with training, there exists the capacity to make a greater impact in this critical area.

***In situ* and *Ex situ* Conservation of Biodiversity**

The national protected area system project was on hold for many years though it is currently undergoing rejuvenation. Individual efforts towards the development and management of protected areas are being made by NGOs and the NPC though coordination could be improved. Also, the biological criteria for establishment of biodiversity reserves in forest concessions need to be clarified and the reserves monitored. The initiatives for co-management undertaken by the EPA, CI and Iwokrama need to be supported and expanded. The possibility of establishing *ex situ* conservation of several key tree species, especially endemics, should be explored.

Incentive Measures and Alternatives

Investigation and promotion of alternative practices in resource exploitation is an area that has received little attention but should warrant greater efforts in the future. Examples of individual work in this area are the promotion of RIL and more environmentally-friendly gold and diamond mining. The question of incentives has by-and-large been overlooked.

Measures for Sustainable Use of Biodiversity

In the future, there is a need for a nationwide inventory of forest resources and an expansion of the PSP programme. It is only with the data derived can meaningful and defensible sustainable levels of harvesting be set. Integrated projects and greater research activities, particularly since the departure of Tropenbos, need to be developed.

4.2 AGRICULTURE

4.2.1 UNCBD AND AGRICULTURE BIODIVERSITY

According to the UNCBD, biodiversity provides not only food and income but also raw materials for clothing, shelter, medicines, breeding new varieties, and performs other services such as maintenance of soil fertility and biota, and soil and water conservation, all of which are essential to human survival.

Nearly one third of the world's land area is used for food production. Based on this, the following dimensions of agricultural biodiversity can be identified:

- Plant genetic resources for food and agriculture, including pasture and rangeland species and forest genetic resources of trees that are an integral part of farming systems;
- Animal genetic resources for food and agriculture, including fishery genetic resources in cases where fish production is part of the farming system, and insect genetic resources; and
- Microbial and fungal genetic resources.

The importance of agro-biodiversity encompasses socio-cultural, economic and environmental elements. All domesticated crops and animals result from human management of biological diversity, which is constantly responding to new challenges to maintain and increase productivity.

The UNCBD, in developing a Programme of Work on Agricultural Biodiversity, has identified focus on critical areas such as:

- Assessing the status and trends of the world's agricultural biodiversity and of their underlying threats;
- Local knowledge of its management;
- Identifying and promoting adaptive-management practices, technologies, policies and incentives;
- The promotion of conservation and sustainable use of genetic resources that are of actual or potential value for food and agriculture;
- Technical aspects of new technologies, such as Genetic Use of Restriction Technologies (GURT) and the potential implications of these technologies on agricultural biodiversity, biosecurity, farming, and the economy;
- Cross-cutting initiatives within the Agriculture Work Programme; and
- The impacts of trade liberalization on agricultural biodiversity.

The Agricultural Biodiversity Programme of Work is hinged on 4 main elements as follows:

1. Assessment: Country-driven assessments of the status and trends of agricultural biodiversity.
2. Adaptive Management: Identification and promotion of adaptive management practices, technologies and related policy and incentive measures.
3. Capacity Building: Promoting the participation and strengthening capacities of farmers and other stakeholders in the sustainable management of agricultural biodiversity.
4. Mainstreaming: Support to coordinate and integrate national policies, strategies, programmes and action plans.

In addition, the Work Programme identifies policy issues that governments can consider when addressing such matters while considering various ways and means to improve the capacity of stakeholders and promote the mainstreaming and integration in sectoral and cross-sectoral plans and programmes at all levels.

4.2.2 AGRICULTURE WITHIN GUYANA'S NATIONAL DEVELOPMENT CONTEXT

4.2.2.1 Basic Features of the Sector

Guyana has frequently been touted as the potential "bread basket" of the English-speaking Caribbean due to its vast land area (approximately 216,000 km^2), suitable climatic conditions, abundance of natural water resources, adequate topographic and pedographic characteristics, and the opportunity for the development of large-scale agricultural production systems.

Agricultural activity in Guyana is concentrated on the coastal plain, which represents less than 10 percent of the country's total land area. The coast, which is at a level of 0.5 m to 1.0 m below sea level at high tide, is protected from the intrusion of saline water by mangroves, dikes, sluices and concrete walls, known collectively as sea defences. Without the extensive drainage, irrigation and flood hydraulic system, cultivation and settlement would have to be located much farther inland. The coast comprises mainly fertile land reefs and clays, very much suited to sugar and rice cultivation and to some extent to other crops. In contrast to the coast, soils of the interior are basically fragile sandy clays types but support some amount of agricultural activity directed towards the production of "other crops" and livestock. The main agricultural activity of the interior regions is that of cattle production in the intermediate and Rupununi savannahs.

Agriculture is the most important sector of Guyana's economy, accounting for around 30% of GDP, 30% of employment, and 40% of export earnings. Sugar and rice are the most important crops in terms of land area, value of production, employment creation, and contribution to export earnings. The important role of the agricultural sector can also be seen from the fact that approximately 70 percent of Guyana's population lives in rural households, and is primarily dependent on income generated from agriculture and related activities.

Sugar cane is cultivated on 20 percent of the agricultural land, and apart from a few independent small farmers, the Guyana Sugar Corporation (GuySuCo) undertakes all sugar cane production. Large rice producers, although few, account for more than 60 percent of the rice produced. However, of the more than sixty non-traditional crops produced, the vast majority is done by small farmers on relatively small acreages.

Table 4. Main Agricultural Activities across Guyana's 10 Administrative Regions.

Region	Population	Area (sq. miles)	Population Density	Main Agriculture Activities
1	18 294	7 853	2.3	Fruit (avocado, citrus), agro-processing (heart of palm, pineapples), ground provisions, cocoa.
2	43 139	2 392	1.8	Rice, coconuts, fruits and vegetables, fishing.
3	95 276	1 450	65.7	Rice, sugar, ground provision, fruits and vegetables, fishing, aquaculture.
4	294 493	862	341.6	Rice, sugar, ground provision, fruits and vegetables, fishing, coconuts, livestock.
5	51 274	1 610	31.8	Rice, sugar, ground provision, fruits and vegetables, coconuts, fishing, aquaculture, livestock.
6	141 455	13 988	10.1	Rice, sugar, livestock, fruits and vegetables, fishing, coconuts.
7	14 682	18 229	0.8	Small-scale farming (subsistence).
8	5 574	7 742	0.7	Small-scale farming (subsistence).
9	14 947	22 313	0.7	Livestock, peanuts, small-scale farming (subsistence).
10	39 271	6 595	6.0	Small-scale farming (subsistence), livestock.

Source: The Poverty Reduction Strategy Paper, Government of Guyana (2005).

4.2.2.2 Agriculture Sector Overview

Sector Overview

The agriculture sector in Guyana is a major contributor to the country's economy. Sugar and rice are the primary crops that are being cultivated and exported. Other crops, livestock and fisheries have also maintained their productivity. Since most of Guyana's population reside on the coast and depend on the activities of the sector, great emphasis has been placed in its development. As such, the sector has generally showed a positive growth pattern over the years.

The sugar industry has been performing remarkably with changes in structural and managerial operations. Measures have also been implemented which allow for optimised performance as well as reduced cost of production. The rice industry has also experienced substantial changes and benefits due to the improvement in the drainage and irrigation systems and land administration.

Other crop industries namely coffee, cocoa, cashew and coconut have been revived over the years and progress has been made in resuscitating the honey, oil palm and cassava industries. A peanut production programme has also been put in place with the aim of improving the volume and quality of the product to suit local and overseas markets.

With regards to livestock, the focus is on promoting efficiency in the rearing of poultry, cattle, swine, sheep and goats. This is in order to achieve increased production for export and self - sufficiency. The development of a milk pasteurization plant, the exportation of eggs and the diversification from traditional areas of production are a few examples of the sector's progress.

The fisheries industry can also boast major success with the construction of the largest freshwater aquaculture demonstration farm and training centre in the Caribbean. A Fisheries Advisory Committee has been established with the function to advise on significant matters affecting the industry. An Observer Programme has also been implemented which ensures that there is compliance with international standards for the protection and conservation of marine turtles, thereby ensuring that Guyana continues to export seafood to the United States of America and other destinations.

Generally, there has been intensified support to agriculture development through technical knowledge, reformation and strengthening of agricultural support services and improvements in accessibility to land for agricultural activities.

Several activities are also in progress targeting improved infrastructure, an effective system for information exchange, training, and economic measures to enhance competitiveness and guidance in market development.

Agricultural Policy

Guyana's policy with regard to agriculture is embodied within the National Development Strategy (2001-2010), the Poverty Reduction Strategy Paper, and the National Competitiveness Strategy.

The policy has also been influenced by:

(a) Guyana's commitment to the Millennium Development Goals (MDGs) especially as they relate to targets for poverty reduction by 2015;
(b) the "AGRO 2003-2015 Plan for Agriculture and Rural Life of the Americas" (AGRO 2015 Plan) which has as its objective *'to improve living conditions for inhabitants in rural areas, by promoting investment and creating a favourable environment to achieve sustainable improvements on agriculture that would contribute to social development, rural prosperity and food security'*, and;
(c) the Jagdeo Initiative (JI) for Agriculture in the Caribbean which seeks to identify and define key, critical and binding constraints to agricultural repositioning and development in countries of the Caribbean Region, and to develop and implement targeted, focused and practical interventions, at both the regional and national levels, and to alleviate these constraints by the year 2015.

The focus of Guyana's agricultural policy is on expansion and improved production and productivity of traditional crops such as rice and sugar and diversification to non-traditional crops such oil palm, coconuts, green vegetables, ground provisions, fruits and flowers and the development of the livestock, aquaculture and agro-processing industries.

Inherent in the policy are strategies to address the constraints to growth as they relate to poor quality extension service, inadequate marketing of agricultural products, lack of access to credit, protracted land policy procedures, high cost of production and poor drainage and irrigation. These have been elaborated within the National Development Strategy (2001-2010), the Poverty Reduction Strategy Paper, and the National Competitiveness Strategy.

There is no specific policy regarding agriculture and biodiversity, though this can be considered to be subsumed within the policies outlined above.

Institutional Framework

The Ministry of Agriculture has the overall mandate for developing Guyana's agriculture sector. The Mission Statement of the Ministry is as follows:

"To ensure the formulation and implementation of policies and programmes which facilitate the development of agriculture in Guyana, thereby contributing to the enhancement of rural life, the sustained improvement of incomes of producers and other participants in the agricultural production and marketing chain; and the maintenance of a sound physical and institutional environment for present and future productive activities."

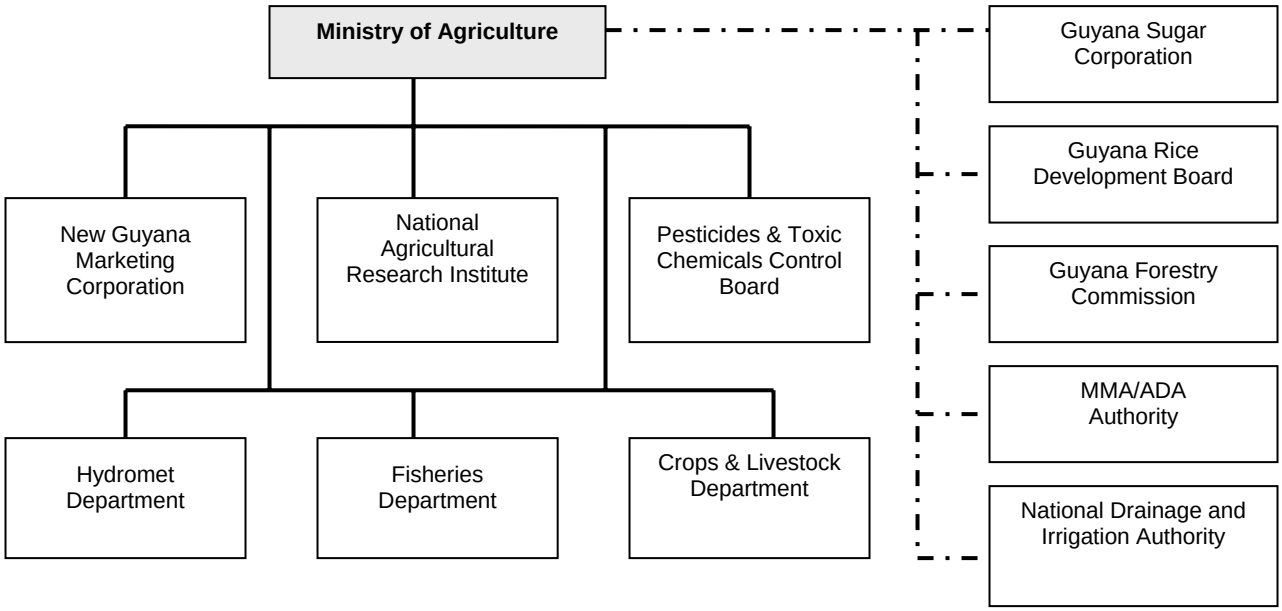
A number of entities and semi-autonomous Agencies and Departments falls under the Ministry; and these include:

- Guyana Sugar Corporation;
- Guyana Rice Development Board;
- Guyana Forestry Commission;
- New Guyana Marketing Corporation;
- National Agricultural Research Institute;
- MMA/ADA Authority;
- National Drainage and Irrigation Authority;
- Pesticides and Toxic Chemicals Control Board;
- Hydrometeorological Department;
- Fisheries Department; and
- Crops and Livestock Department.

Within the framework for natural resources and environment planning and management, several agricultural entities are involved. At the policy level, the agriculture sector is represented by the Minister of Agriculture and several sector institutions such as the Guyana Forestry Commission and Hydrometeorological Department on the Cabinet Sub-Committee on Natural Resources. These are also members of the Natural Resources and Environment Advisory Committee (NREAC) while others participate on the National Biodiversity Advisory Committee (NBAC) which is coordinated by the EPA.

Figure 2. Institutional Framework for the Agriculture Sector.

Semi-autonomous institutions are shown in dotted lines.



Agriculture Sector Performance and Initiatives

Agriculture remains one of the more important economic sectors in Guyana and efforts are underway to strengthen and diversify the sector's outputs. The following is a summary of recent performance of the key areas within the sector along with strategic plans being implemented.

Sugar

The sugar industry in Guyana still remains Guyana's largest industry directly employing over 18,500 persons and being one of the main contributors to the economy accounting for 18% of GDP. In 2006, the industry achieved a production of 259,491 tonnes.

A Strategic Plan (2005-2015) for sugar has been developed and adopted. The plan, in response to the rising cost of producing sugar and cushioning the impact of the 38 percent preferential cut of sugar prices by the European Union (EU), aims at a production of 500,000 tonnes/annum, electricity generation for the national grid, increased cane supply from private farmers, new/rehabilitated factories and cost reduction to US$0.12/pound. The US$169 m Skeldon Sugar Modernisation Project is moving ahead and expected to be completed by February 2008. Under this project, a modern state-of-the-art factory with a capacity of 120,000 tonnes/annum and co-generation facility of 10 MW will be installed.

The Government of Guyana has expressed its intention to establish a distillery, secure investments for a refinery, and use sugar-cane as a source of bio-diesel, when sugar production has increased as part of a long-term development plan for the sugar industry with focus on diversification activities.

Rice

Guyana's rice industry is the second largest agricultural sub-sector in Guyana contributing approximately 4% to GDP. There are approximately 10,000 farm families involved in rice cultivation with over 150,000 persons employed directly and indirectly in milling, exporting, input supply, transport, etc. The rice sector, after initial successes in the 1990s went through a slump due mainly to a sharp decrease in prices. However, in recent years, there has been improved performance. The table below shows the production for 2005 and 2006.

Table 5. Rice Production and Export Data for 2005 and 2006.

	2005	2006
	Actual	**Actual**
Area Sowed (ha)	114,685	110,273
Harvested (ha)	106,645	102,083
Yield (bags/ac)	63	72
Paddy Prod (mt)	420,365	468,730
Rice Prod (mt)	273,237	306,828
Export (mt)	182,175	204,296
Export Value (US $)	46,172,149	54,425,740

Source: Ministry of Agriculture (2006).

Among the key policy interventions in the rice sector have been:

- The establishing of a centralized overseeing body, the Guyana Rice Development Board (GRDB);
- Support to the Burma Rice Research Station; and
- Grant assistance from the European Union to assist rice farmers.

Other Crops

In addition to rice and sugar, in recent years, there have been efforts to promote cash crop farming and develop non-traditional agriculture crops. Among some of the initiatives have been:

- Greater support to cash crop farming (fruits and vegetables);
- Organic farming of cocoa plantations in Mabaruma/Hosororo;
- Peanut production programme in the Rupununi;
- Cashew nut processing initiatives at St. Ignatius, Region 9; and
- Resuscitating the honey, cut flower, oil palm and cassava industries.

In 2006, the export volume for non-traditional agricultural produce and products was 4,437 tonnes as compared to 4,272 tonnes for the same period in 2005. The value of exports for the period January to November, 2006 was G$1.2 billion or US$6.0 million. This represents an increase in production for export and export earnings.

Several donor-funded projects are providing assistance to small farmers to provide support and promote diversification. These include the Poor Rural Community Support Services Project (PRCSSP) and the Agriculture Support Services Programme (ASSP).

Livestock

The Ministry of Agriculture continues to implement its Livestock Development Programme with focus on promoting efficiency in the rearing of livestock such as poultry, cattle, swine, sheep and goats. The poultry industry has grown significantly over the last 15 years with estimated assets of US$30 million. Among key initiatives have been:

- The setting up of a milk pasteurization plant at Danzic, Mahaica;
- Guyana being classified free from Foot and Mouth Disease (FMD) by the International Organisation of Epizootics (OIE); and
- Establishing of a modern abattoir in Region 5.

In 2006, the following interventions were made:

- Distribution of Veterinary Supplies: Farmers across Guyana benefited from veterinary supplies and services - countrywide vaccination, distribution of vitamins, sector assessment, and development of standards for poultry feed production as a response to stunted growth in the poultry sector;
- Poultry Diagnostic Laboratory was established;
- Avian Influenza Prevention Programme: Avian Influenza Programme Stakeholders seminars were held in all Regions. A draft Avian Influenza Manual was prepared for distribution to farmers; and
- Foot and Mouth Disease Surveillance: Focus is currently on Foot and Mouth Disease Surveillance in Region No. 9 with emphasis on upgrading of camps and construction of drive through dips for vehicle crossings.

The Government of Guyana continues to identify the agriculture sector as a priority for economic development in terms of exports as well as food security. A number of initiatives have been identified for focus in 2007 and beyond, and includes: training of more personnel and the expansion and improvement of support to farmers through extension services; improvement to the drainage and irrigation system with more direct involvement of farmers in managing such infrastructure; improved access to financing and markets as well as better facilities to support exports; and, a land use policy to make more lands available for agricultural activities.

4.2.3 AGRICULTURE WITHIN GUYANA'S NBAP

Section 4.2.2 of Guyana's National Biodiversity Action Plan 1999-2004 provides an overview of agricultural biodiversity. This section, as extracted from the NBAP, is outlined below.

Agricultural biodiversity

Chapter 25 of the draft National Development Strategy constitutes the most recent policy document on agriculture. The Strategy does not, however, identify a relationship between agriculture and biodiversity and the object of its focus is economic, institutional, and legislative development in the sector. Chapter 27 of the document identifies a number of objectives relating to crops, livestock, animal health, genetic improvement, plant protection and quarantine, all of which are areas relevant areas of biodiversity consideration.

Agricultural resources are the most widely used biological resources in Guyana. Some of the most critical needs in this sector would be in relation to the preservation of genetic diversity for breeding purposes, characterization of the genetic diversity and the protection of local species and habitats from potentially damaging invasive and disease species. There is no prepared plan for the agricultural sector.

Some agricultural legislation, such as the Plant Protection Act of 1942 and the Animal Diseases Act of 1936, together address issues of plant protection and animal diseases but, due to their age, would require revision in order to address important recent developments such as biotechnology and biosafety.

Apart from this, there is no further elaboration of agricultural biodiversity within the NBAP or projects developed in this regard.

4.2.4 AGRICULTURE AND BIODIVERSITY IN GUYANA

While there is no policy position on agriculture and biodiversity, there is a view that the sector, through its efforts towards sustainable agriculture, has inherent approaches which contribute to biodiversity protection and maintenance. Initiatives have been taken in the following areas:

- Policy and Planning;
- Control and Management of Agrochemicals;
- Environmental Permitting;
- Monitoring;
- Integrated Pest Management;
- Promoting Agro-Forestry and Organic Farming;
- Education, Information and Training; and
- Research.

Policy and Planning

Environmental considerations and those of biodiversity now constitute part of the pre-planning for the agriculture sector. The GoG has established the Agriculture Project Cycle Unit which serves as a technical body to provide policy guidance on the planning of agriculture initiatives. Within the agriculture sector itself, not many entities have established a policy on the environment. Perhaps the only one is the Guyana Sugar Corporation which identifies its environmental policy.

Guyana is in the process of developing a policy on genetically modified organisms (GMOs) while the Caribbean is working towards a common position. A draft National Biosafety Framework for Guyana has been prepared and is currently being reviewed. The EPA is presently developing a list of indicators for biodiversity in the agriculture sector.

Control and Management of Agrochemicals

The Ministry of Agriculture established a Pesticide and Toxic Chemical Control Board in 2000 which is charged with the responsibility for making arrangements and providing facilities for controlling the manufacturing, importing, transporting, storing, selling, using and advertising of pesticides and toxic chemicals.

Efforts are underway in establishing a state-of-the-art pesticides laboratory. In the area of training, a training manual on the safe use and management of pesticides was completed and the Board has been involved in conducting training seminars for farmers. A Pesticides Database for Guyana is presently being developed with increased efforts on monitoring and enforcement. At the end of 2006, ninety-three vending premises were licensed and a list of 22 prohibited pesticides were approved and gazetted.

However, while there is some stringency with regard to pesticides, more assessment needs to be done with regard to fertilisers being used especially in the rice sector where there has been little environmental assessment done.

Environmental Permitting

All rehabilitation projects and medium- and large-scale agriculture ventures are required to secure an Environmental Permit from the EPA. Depending on the scale and extent of the project, EPA may require a full Environmental and Social Impact Assessment Study. Of recent, several large-scale agriculture initiatives had undertaken environmental assessments, among them the Skeldon II Project and the Intermediate Savannahs Project. With increased donor support to the agriculture sector, environmental assessment is becoming a key requirement for development projects in the agriculture sector.

Monitoring

In some agricultural areas, there is strict monitoring to restrict access especially from persons who would want to engage in sport hunting and fishing, etc. This monitoring system prevails in conservancy areas and is managed and operated by the management entity for these conservancies. In some areas, such as East Berbice, GuySuCo takes on this responsibility which has also come as a requirement of donor-funded projects especially as a measure of environmental change.

Integrated Pest Management (IPM)

A number of initiatives are in train through IICA and NARI towards IPM in the agricultural sector. Over the last 10 years, there has been research work done on the use of botanicals, both wild and cultivated, with a number of successful projects, among them, the making of acoushi ant bait using local materials. The potential crop protection uses of fifty local plant species were documented and published in 1999, as a product of a CIDA-funded project *"increasing agricultural production through the use of natural environmentally friendly pesticides".*

An Integrated Pest Management (IPM) programme has been implemented by the Guyana Rice Development Board (GRDB), which has developed an IPM model for the control of paddy bug *(Oebalus poecilus)*, which is the most important pest of rice in Guyana.

In 1997, the Ministry of Agriculture established the Pink Mealybug Coordinating Unit, which has since implemented an effective system to control Pink Mealybug through the use of two natural predators *Anagyrus kamali* and *Crytolaemus montrouzieri.*

In addition, GuySuCo is phasing out all sprayed pesticides on the estates. All insect pest control is by natural predation and parasitism (aided by releases of bio-control agents reared in estate insectaries) and cultural methods (e.g. flooding fields to control the *Castnia* borer). Research is being proposed to better understand the biodiversity and ecosystem of the sugar cane plantation as a first step to better research IPM.

Promoting Agro-Forestry and Organic Farming

The agricultural sector in Guyana continues to face new challenges. Such challenges relate to the need for sustainable production methods and high-quality products, as well as the urgent need to improve competitiveness and extend participation in global markets. Organic agriculture is being posited as a mechanism to attain these objectives. Organic production systems are based on specific and precise standards of production, which aim at achieving agro-ecosystems, which are socially and ecologically sustainable. Apart from being an option that falls within the concept of sustainable agriculture from a resource use point of view, organic production has an established international market.

IICA, since 1994, initiated agro-forestry demonstration projects in 9 communities in Region 2. Of recent, much interest has been generated in organic agriculture, especially with the launching of the Organic Cocoa Project in Region 1. GuySuCo has also embarked on organic sugar production at Uitvlugt. The potential also exists for other crops such as tropical fruits, vegetables, root crops as well as livestock, to be organically produced. A number of farmers as well as farmers' group have expressed an interest in organic production and IICA, along with AMCAR and NARI, are working with communities in Regions 1 and 2 on an organic pineapple project to utilize the facilities of AMCAR.

Education, Information and Training

Under the Ministry of Agriculture, there is the Agriculture In-Service Training and Communications Centre (ATICC) to provide support to farmers in the area of Non-Traditional Crops and Livestock Support Services. Among the initiatives of the Centre has been: (1) training sessions for farmers across Guyana; (2) farmer education programme utilising radio and television with fortnightly programmes; and, (3) producing technical information packages for farmers and investors.

Under the Agricultural Support Services Programme, Component (b) D&I Institutional Development (ii) Farmers Training and Extension, some 6,000 farmers are expected to be trained in environmental aspects of the adequate use of pesticides, fertilizers and disposal of liquid and solid waste.

Efforts are underway for expansion research activities to meet the specific needs of farming communities based on feedback from the Extension Services Unit of the Ministry of Agriculture and to integrate extension and research.

IICA has been supporting regional Youth Group Initiatives in Agriculture for which there is a Guyana Chapter. Recently, this body undertook a project on bee-keeping where the project site was the mangrove forests on the West Demerara foreshore.

While there is no course on biodiversity in agriculture offered by the Faculty of Agriculture and Forestry, University of Guyana, some aspects are covered through a course on plant breeding. Little work has been done by the Faculty on biodiversity in the agriculture sector though some work is on-going on mushrooms.

Research and Germplasm Collection

The National Agricultural Research Institute (NARI) operates as the principal agricultural research agency in Guyana and is responsible for increasing the productivity of crops and livestock for national self-sufficiency and export. The research projects support plant protection, biotechnology, soil microbiology, and soil and plant analysis.

NARI is currently focusing on research in crops, soils, plant genetic resources, pest management, post harvest, agro-processing and livestock production.

Burma Research Station

In the rice sector, under the Agricultural Support Services Programme, Component (c) Rice Seed Development, disease resistant and high yield new rice seeds varieties here have been introduced through research and development activities at the Burma Research Station.

GuySuCo

GuySuCo is presently developing a project to look at biodiversity within the sugar cane ecosystem. As part of the Skeldon II Project, there is a requirement of indicator species as a part of monitoring.

Legislation

While there is no specific legislation within the agriculture sector with a direct bearing on biodiversity, the following are related legislation:

- Animals (Control of Experiments) Act CAP 71:03;
- Animals (Movement and Disease Prevention) Act No. 14 of 2003;
- Caribbean Agricultural Research and Development Institute Act No. 6 of 1988;
- Crops and Livestock Registration Act CAP 68:04;
- Drainage and Irrigation Act CAP 64:02;
- Livestock Improvement Act CAP 71:01;
- National Agricultural Research Institute of Guyana Act CAP 68:02;
- Pesticides and Toxic Chemicals (Control) No. 13 of 2000; and
- Plant Protection Act CAP 68:03.

4.2.5 GUYANA'S PROGRESS ON THE UNCBD AGRICULTURE BIODIVERSITY WORK PROGRAMME

Annex II-B provides a status of Guyana's efforts to implement activities as part of the Agriculture Biodiversity Work Programme. It is recognised that many of the achievements have been through initiatives within the sector and are not necessarily a part of NBAP.

4.2.6 IMPROVING THE FOCUS ON BIODIVERSITY WITHIN THE AGRICULTURE SECTOR

Within the agricultural sector, there are a number of initiatives which indirectly address the issue of biodiversity. However, there is a clear need for more prominence to be given to biodiversity within this sector's planning and operations. The following have been identified as areas where action is needed.

Awareness

This can foster a better understanding and leads to changes in attitudes and practices. The EPA, by virtue of its mandate, should play a coordinating role in this, and perhaps take advantage of existing education and awareness tools being utilised in the agriculture sector, for example, GuySuCo's Round Up TV Programme, NARI Handbooks, manuals being prepared by the Pesticide Board, the many agriculture fora such as Agri-Expo initiatives of the Ministry of Agriculture, as well as EPA's public education and awareness initiatives through its Education, Information and Training Division.

Education

There is need to improve and expand agri-extension services to coastal and hinterland farmers and to incorporate biodiversity considerations into such programmes and develop a course on Agriculture and the Environment, or Agriculture and Biodiversity within the Programmes at the University of Guyana and Guyana School of Agriculture.

Promotion of Sustainable Initiatives in Agriculture

There is need for building on existing initiatives and further promote organic farming and agro-forestry while at the same time utlising technology to improve indigenous practices and exploring investments such as conversion technologies to utilise agricultural waste and by-products.

Mainstreaming Biodiversity into the Agriculture Sector

There is a need for more awareness followed by coordination in the implementation of the UNCBD Agriculture Biodiversity Work Programme among Institutions with activities being incorporated into the Work Plans of sector institutions and for projects and programmes to take on board biodiversity considerations in their planning and implementation. The EPA can also play a more prominent role in this regard by virtue of its mandate and coordinating function.

Legislation

Consideration needs to be given for a body of legislation regarding biodiversity.

Monitoring

There is a need to monitor biodiversity change emanating from agricultural practices. With the EPA developing a list of indicators for agriculture biodiversity, on-going monitoring and feedback is an area which can be introduced not only to large-scale agriculture establishments, but also to small farmers perhaps through the Agriculture Extension Services.

Research and Information Collection

A comprehensive assessment of the extent of biodiversity within the agriculture sector is required as well as research on agricultural practices (including agro-technologies) and its impact to biodiversity and the natural environment. In addition, research and documentation of agricultural practices and knowledge base of farmers and indigenous and local communities is necessary along with costs and benefits of management practices and alternatives. As well, there is need for improved coordination of research activities among institutions and to source funding for research.

Information Sharing and Management

Better coordination among Agencies and entities for the collation, organisation and sharing of information can be achieved through the establishing of an Information Clearing House for Agriculture coordinated by the Ministry of Agriculture. Recognising the role of the EPA as Focal Point for the CBD, and the present initiative of the Agency to establish a National Biodiversity Information Service to share information on biodiversity research, this Information Service can be the entity for collecting, collating and dissemination information on agriculture biodiversity. At the same time, the sharing of information and experience among and between farmers can be facilitated through the establishing of a network of farmers and farmers organisations.

Institutional Strengthening and Capacity Building

This should be on-going to improve on the number of staff, as well as to attract more qualified personnel, and to build capacity as well as secure additional financial resources to implement activities.

4.3 COASTAL RESOURCES

4.3.1 UNCBD AND COASTAL BIODIVERSITY RESOURCES

Seas and coastal areas are under threat from pollution, over-exploitation and ill-planned coastal development. Impacts on marine and coastal ecosystems can be grouped in five main categories: chemical pollution and eutrophication; fisheries operations; global climate change; alterations of physical habitat; and, invasions of exotic species. Many coastal and marine areas have been degraded beyond rescue, and the world's fishery resources are in danger of depletion. Other living resources, such as mangroves, corals and species amenable to bioprospecting, are also being severely exploited. Coral reef ecosystems are increasingly being degraded and destroyed worldwide by a variety of human activities and by global warming.

In view of a global concern for the conservation and sustainable use of marine and coastal biodiversity, the Parties to the Convention on Biological Diversity agreed on a programme of action for implementing the Convention. The programme, called "Jakarta Mandate on Marine and Coastal Biological Diversity" was adopted in 1995. Through its programme of work, adopted in 1998, and reviewed and updated in 2004, the Convention focuses on integrated marine and coastal area management, the sustainable use of living resources, marine and coastal protected areas, mariculture and alien species.

The programme of work on Marine and Coastal biodiversity aims to assist the implementation of the Jakarta Mandate at the national, regional and global level. It identifies key operational objectives and priority activities within the five key programme elements, namely: implementation of integrated marine and coastal area management; marine and coastal living resources; marine and coastal protected areas; mariculture; and, alien species and genotypes. It also provides a general element to encompass the coordination role of the Secretariat, the collaborative linkages required and the effective use of experts, as well as enabling activities to assist.

4.3.2 COASTAL BIODIVERSITY RESOURCES WITHIN GUYANA'S NATIONAL DEVELOPMENT CONTEXT

4.3.2.1 Guyana's Coastal Zone

Guyana occupies part of the northern seaboard of South America, connecting the Caribbean with South America. This geographical location is important for a number of reasons. It overlies the central part of the Guiana Shield and has vegetation and soil that are characteristic of this geologically old area. In addition to this, its southern part falls within the northern boundary of the Amazon region and because of this, it shares many species found in the Amazon region.

The coastal zone of Guyana is considered one of the most important natural regions in the country since over 90% of the population as well as economic and administrative activities are concentrated in this area. Guyana's coastal zone can be described as occupying approximately 7 per cent of the total land area of the country (216,000 km^2), and extending along the entire 430 km of the Atlantic coast. It varies in width from 26 km to 77 km and is as much as 1 m below mean high tide levels in some areas.

The geology and geomorphology of the Guyana coast is that of coastal 'Amazon clay' deposits. These extend under the continental shelf and have reached an average thickness of 20 m over the last 6,000 years, producing a flat, low-lying, coastal plain. It is on this strip that most of the industrial cultivation of sugar cane, rice and other crops is carried out. The richest soils, consisting of clays and interspersed with sand ridges, are found here and occur for the most part below sea level. The rest of the coastal plain consists of mangrove forests and swamps. The former constitute the coastal forest type in the country most threatened with conversion.

Originally, the coastal sea defences were natural with banks that were colonised by mangrove vegetation. Early Dutch settlers initiated agricultural development in coastal areas and to protect these, they constructed a complex system of sea walls, drainage and irrigation canals, sluice gates and inland dams. To reclaim the coastal land, earthen dams were built to protect against the sea. Even today, still in some areas, mangrove forests continue to offer protection against the sea.

Over the years, net erosion along the Guyana coast and a general regression of the coastline has taken place. This process has adversely affected the economic and socio-economic development of the coastal area. The numerous environmental consequences that have become evident have served as an impetus for promoting the need to embark on a National Integrated Coastal Zone Management programme.

While the need for harmonised action to counteract all of these problems has been acknowledged, the lack of public awareness, inadequate institutional capacity and lack of funding sources have been recognised as major constraints to these efforts. Today, the coastal zone of Guyana is considered one of the most important natural regions in the country.

4.3.2.2 Biodiversity within the Coastal Zone

While somewhat incomplete in terms of information, the Country Study on Biological Diversity (1992) tabulated the number of species recorded for each broad taxonomic group. It is recognized that while much of the biodiversity of Guyana is located in the forested interior, a significant part of its biodiversity is found on the coast, in the Coastal Plain and coastal zone. There is still to be a comprehensive assessment of biodiversity within the coastal zone though information exists on the mangrove ecosystem which is regarded as one of the key ecosystems within the coastal zone.

Various studies have shown that there are three species of mangroves in Guyana - *Rhizophora mangle* (Red mangrove), *Avicennia germinans* (black mangrove), and *Laguncularia racemosa* (white mangrove). Mangrove forests form unique ecological niches and habitats for a variety of marine and terrestrial animals. There is a mix of vegetation in most of Guyana's coastal and riverine mangrove stands. While the predominant vegetation is of the mangrove species, there is often some *Acrostichium sp*.; *Laguncularia racemosa*; *Conocarpus erectus* and *Batis maritima*. These vegetation associations are known to support substantial coastal and marine biodiversity, which include mangrove tree species and diverse avi-faunal species including the scarlet ibis (*Eudocimus ruder)*. The sandy beaches are known to be the nesting areas for four species of turtles - the green turtle (*Chelonia mydas)*, the leather-back (*Dermochelys coriacea)*, the hawksbill (*Eretmochelys imbricata)*, and the olive-ridley turtle (*Lepidochelys olivacea)* (Pastakia, 1991). Mangrove forests are also important habitats for the manatee (*Trichechus manatus)* and the spectacled caiman (*Caiman crocodilus)*; nursery and spawning areas for commercially important shrimp (*Xyphopenaeus kroyeri)*, (*Penaceus subtilis)*, (*Penaeus braziliensis)*, fish, crabs, particularly the fiddler crabs (*Uca sp*), and other faunal associates.

Pastakia (1991) provided a detailed discussion on the variety of mangrove species that may be present in Guyana and also a discussion on the distribution patterns along the coastal and riverine habitats. Table 6 gives the regional estimates of Mangrove Forests in Guyana as at 2001.

Table 6. Regional Estimates of Mangrove Forest in Guyana (GFC, GIS Analysis, 2001).

Region	Approximate Area (ha)	Percentage
1	49,100	61
2	11,200	14
3	5,240	7
4	3,540	4
5	7,252	9
6	4,100	5
Total	80,432	100

4.3.2.3 Biodiversity Use within the Coastal Zone

The principal uses of biodiversity along Guyana's coastal zone are: utilisation of the mangrove forests for firewood, fishing lines and poles; extraction of heart of palm; and the trapping wildlife for the wildlife trade. There is still to be a determination of the direct impact of anthropogenic actions on the mangrove ecosystem although the principal measure

to curb this practice has been the development of a National Mangrove Management Action Plan (NMMAP) elaborated in Section 5.3.4.2.

Guyana's coastal area is home to a booming wildlife trade. Wild animals are captured by trappers living in the coastal and river areas, and sold to traders. Important species include scarlet macaws, yellow macaws, common parrots, love birds, tawa-tawas, toucans, boa constrictors, anacondas, emerald tree boas, pacas, squirrel monkeys and capuchin monkeys. Impacts on biodiversity can be significant due to trapping and associated activities in the trade, and from the destruction of habitats. The Wildlife Management Authority has the mandate of regulating wildlife trade internationally so it concentrates on mainly the export of wildlife. Nationally, there are limited provisions for trade in domestic bush meat, and should the trade continue to proceed without proper management strategies, the species involved will be at greater risk of being over-exploited. There is a clear need for assessment of some species to be conducted so as to guide the implementation of a scientifically-based management system for those species.

4.3.3 COASTAL RESOURCES MANAGEMENT AND GUYANA'S NBAP

While there are a number of programme areas and projects which will impact on coastal resources management, NBAP did not address coastal biodiversity in a direct manner. Regarding an Ecosystem approach, Section 3.1.1 of the NBAP that deals with Ecosystem Diversity acknowledges that there is no ecological classification system that has been applied to Guyana and therefore there is no formal bio-geographical classification available. Ramdass and Hanif (1990) presented a biogeographic classification for the country and this classification recognized Marine and Coastal Ecosystems in Guyana as including the following: marine, littoral, estuarine, mangrove and palustrine sub-systems. This, however, is as far as the NBAP document goes in addressing coastal ecosystems. No attempt has been made to specifically identify biodiversity associated with these ecosystems.

4.3.4 COASTAL RESOURCES MANAGEMENT AND BIODIVERSITY IN GUYANA

While it has been stated in many documents, including the Integrated Coastal Zone Management (ICZM) Action Plan (2000), that Guyana's coastal natural resources are of critical importance and they support human settlement, agriculture, fisheries, mangroves, tourism, transportation and water supply, the ICZM Action Plan does not address coastal biodiversity as a separate issue.

Given this fact, there is still a lot to be done to implement and achieve the objectives of Decision IV/4 of the COP since many of the targets set by the ICZM Action Plan have not been achieved for one reason or the other. However, over the years, a number of initiatives and actions have been undertaken that have been invaluable in terms of coastal biodiversity management, monitoring and use.

Both the NMMAP and the ICZM Action Plan have recognized the many compatible uses and services of coastal mangroves - wood harvesting, bark and honey collection, coastal protection and small-scale artisanal fishery.

4.3.4.1 Threats and Issues in Coastal Biodiversity Management and Conservation

The following threats and issues in management and conservation of coastal biodiversity have been identified:

- Anthropogenic impacts – fires, fishing and sand mining;
- Habitat destruction and associated impacts in coastal ecosystems;
- Impacts of inland activities – mining, logging and oil exploration;
- Limited data on coastal resources;
- Limited integrated planning and limited institutional linkages and collaboration; and
- Potential threats from offshore oil exploration.

Some of the recommendations put forward to address these issues and threats are:

- Management efforts need to be given legal status;
- Delineate the coastal zone, legally;
- Comply, more strictly, with EIA requirements for coastal development activities;

- Empower local communities for monitoring and enforcement in management and conservation;
- Conduct risk analysis when it is required;
- Conduct resource inventories;
- Incorporate climate change analysis in coastal development planning;
- Link coastal and marine issues and cross-cutting issues;
- Increase capacity building;
- Improve access and benefit-sharing;
- Improve and harmonize legislation; and
- Apply, more strictly, the applicable legislation.

4.3.4.2 Current Approach to Coastal Resources Management

At the strategic policy level, while there is no direct focus on Guyana's coastal zone and coastal resources management, reference is made within the NDS (2001–2010) on coastal issues through policies, strategies and recommended actions for fisheries, tourism, forestry, sea defences, water management and flood control, and drainage and irrigation.

Integrated Coastal Zone Management Action Plan

The principal approach to addressing coastal resources management has been through the establishment of a broad-based Coastal Zone Management Committee and the preparation of an ICZM Action Plan (2002).

The ICZM Action Plan recognises that Guyana's coastal natural resources are of critical importance and they support human settlement, agriculture, fisheries, mangroves, tourism, transportation and water supply, and it adopts a cross-sectoral and integrated approach. However, there is no specific focus on biodiversity.

Table 7 shows a summary of the main actions set out in the ICZM Action plan that can impact on the management and use of coastal biodiversity and the achievements to date.

Table 7. Summary of main actions set out in the ICZM Action Plan.

Action	Achieved	Comment
Delineation of coastal zone.	No	Discussions at various fora to address this matter. General consensus is that legislative and other deliberations are required since boundary delineation has serious social, political and cultural implications.
Review Existing Legislation to identify gaps and overlaps.	No	One study done by consultant Judy Daniels. No further action taken.
Public awareness.	Yes	Regional sensitization workshops have been conducted. The EPA's web page is updated with relevant information. News paper articles are prepared on specific issues. Brochures on ICZM and biodiversity have been prepared and are disseminated at various fora.
Shore Zone Monitoring.	Limited	Consultations and preparatory work by line agencies, e.g. GFC, Sea Defence, have been undertaken. The ICZM Committee has been serving as an advisory committee to the EPA and has guided the preparation of a proposal which was submitted for funding by the CDB. This project seeks to create a digital map of the coast with the inputs of coastal systems and biodiversity resources, identify data gaps and obtain data to fill gaps. This will improve the data for decision-making. The SRDD has been actively engaged in sea defence maintenance, rehabilitation and construction. The institutional capacity building project has also been operational. Training, data generation, data acquisition and data management have been the central focus.
Mangrove Management.	Limited	National Mangrove Management Plan developed in 2001. Plan is being implemented in small parts by the GFC. Institutional Capacity training programme had one component on mangrove management. Training and data collection were the main focus of this component to allow for the understanding of the resource and the dynamics of use which are important in management. On-going research is being conducted by staff and students at UG into various aspects of mangrove ecology. A Draft Code of Practice for Mangrove Utilization and Management was developed.

Aerial photographic survey of the coast.	No	CDB project developed. This project is expected to address some aspects of this objective.
Monitor and check benchmarks of coastal erosion and accretion.	No	
Status of coastal and marine resources.	Limited	Work on a Draft Fisheries Management Plan has been ongoing. GMTCS has been engaged in WWF-supported Marine turtle by-catch and harvesting studies. No resource inventories of coastal biodiversity resources have been compiled. Shell Beach has been identified as a potential Protected Area. Preparatory work for this is on-going through the GPAS project. GMTCS has been engaged in projects at Shell Beach.
Implement the use of EIA as a planning tool.	Yes, significant.	EIA is mandatory for all development projects. EPA implements and manages the system for Environmental compliance.

National Mangrove Management Action Plan (NMMAP)

While the mangrove ecosystem is one of the major coastal ecosystems that can offer good ecosystem and biodiversity protective services, it is one of the ecosystems that are under serious threat from natural and anthropogenic sources.

The National Mangrove Management Action Plan (NMMAP) was developed in 2001 by the GFC through collaboration with other agencies. The Plan recognizes mangrove forests as an important coastal and riverine ecosystem in Guyana, which is capable of reducing the damage caused to the masonry and earthen defence structures by taking the brunt of wave action, and at the same time providing habitats for marine and terrestrial life forms, and products and services for the population. The Plan seeks to elevate concern for mangrove forests to the level of policy, planning and actions, and foster a more co-ordinated approach in planning, policy formulation, inter-institutional co-operation and implementation of actions to support mangrove management.

Table 8 provides a summary of the recommendations contained in the NMMAP and the current status.

Table 8. Summary Recommendations and Status of Actions in NMMAP.

Proposed actions	GFC in consultation with Responsible Agency	Indicators	Status
1. Review policy and legislation to address the conservation of mangrove forests (Page 27, 4.2).	Attorney General's Office Environmental Protection Agency	▪ Review of policy and legislation on issues affecting mangrove forest not mentioned in the national Forest policy of 1997 and draft Forest legislation of 1999. ▪ Drafting and inclusion of mangrove forests into national policy and legislation. ▪ Adherence to relevant international Conventions.	No action. No action. Yes.
2. Establishment of National Mangrove Coordination Committee and institutional arrangements for mangrove management (Page 19, 3.2).	Environmental Protection Agency Integrated Coastal Zone Management Committee Regional Democratic Councils Tourism and Hospitality Association Sea and River Defence	▪ Seminars, workshops on mangrove management policy and land use. ▪ Coordination for the implementation of actions. ▪ Memorandum of Understanding.	Yes. Staff at GFC identified to deal with mangroves. No action.
3. Review of Zonation of mangrove forest for protection and conservation / utilization (Page 24, 4.1).	Sea and River Defence National Protected Areas System Centre for Study of Biological Diversity University of Guyana Integrated Coastal Zone Management Committee	▪ Maps, Reports.	No action.
4. Develop minimum operational standards for mangrove harvesting (Page 32, 4.6).	Sea and River Defence Fisheries Department Other stakeholders	▪ Minimum standards for mangrove harvesting, management strategies, newly planted areas and protected areas with relevant legislation.	Draft Code of practice for mangrove harvesting prepared.
5. Raise public awareness through education and training (Page 31, 4.5).	Environmental Protection Agency Integrated Coastal Zone Management Committee University of Guyana Non Governmental Organizations Tourism Industry National Protected Areas System	▪ Reports and education material, trained rangers, documentary, leaflets, lecturers, seminars, outreach programmes, demonstrations and exhibition on mangrove products and services.	Some Public information messages disseminated.
6. Rehabilitation / restoration of mangrove sites (Page 24, 4.1).	Sea and River Defence Environmental Protection Agency	▪ Rehabilitation of at least three identified sites, Reports, maps.	No activities. Discussions held for rehabilitation project
7. Control, monitoring and Enforcement (Page 28, 4.3).	Environmental Protection Agency National Law Enforcement Agencies Regional Democratic Councils Sea and River Defence	▪ Zoning document. ▪ Protection mangrove zone given under National Protected status of Areas System, Environmental impact statements, monitoring and inspection reports.	No action. No action.
8. Research (Page 31, 4.4).	University of Guyana National Resources and Environment Advisory Committee National Agri. Research Institute Fisheries Department & NGOs	▪ Research projects prioritized, documented criteria for research, reports and computerized data.	Ongoing research being done at UG by staff and students.

Conservation Efforts of the Guyana Marine Turtle Conservation Society at Shell Beach

Shell Beach is an important coastal biodiversity area for a number of reasons. The site encompasses entirely intact ecosystems, including extensive mangrove and lowland swamp forests and seasonally flooded ite palm savannas. Anthropogenic changes are currently limited to a few isolated encampments and small farms on the Atlantic and Waini coasts. The area provides nesting beaches for four species of marine turtles *Dermochelys coriacea, Chelonia mydas*, *Eretmochelys imbricaae* and *Lepidochelys olivacea* – a rare occurrence since most nesting beaches harbour only one or two species. Other chelonians include populations of the yellow-foot tortoise (*Geochelone denticulate)* in the swamp forest and scorpion mud turtles, *Kinosternon scorpioides*. Giant river turtle, *Podocnemis expansa*, and even mata-matas, *Chelus fimbriatus,* are found at Shell Beach. Manatees are reported to occur in the isolated Baramanni lakes. There are also psittacine birds, especially *Amazona amazonica*, but it has been reported that trapping has led to a decrease of the populations of some of these birds. The mangrove and tidal areas are habitats for many wading birds, including the scarlet ibis, several heron and egret species, roseate spoonbills and Caribbean Flamingos. Tapirs, white-tailed deer, jaguars, red howler monkeys and squirrel monkeys, all occur within the Shell each area.

Conservation in the Shell Beach area has its genesis in the 1960s when Dr. Peter Pritchard started work in the area specifically looking at marine turtles. In 2001, the Guyana Marine Turtle Conservation Society (GMTCS) was formally established, and since then it has been focusing on five main areas:

- Turtle conservation;
- Education and awareness for stakeholders;
- Research;
- Community empowerment; and
- Developing Shell Beach as a Protected Area.

The high ecosystem and biodiversity value of the Shell Beach area has given rise to its recognition as a priority site for establishing a Protected Area, and the GMTCS has been identified as the Lead Agency for this process which is currently being overseen by the EPA.

4.3.5 GUYANA'S PROGRESS ON THE UNCBD COASTAL BIODIVERSITY WORK PROGRAMME

Annex II-C provides a status of Guyana's efforts to implement activities as part of the Coastal Biodiversity Work Programme. In spite of slow progress in the implementation of the ICZM Action Plan, there has been some achievements through initiatives that were not necessarily a part of NBAP.

4.3.6 IMPROVING THE FOCUS ON BIODIVERSITY WITHIN THE COASTAL RESOURCES SECTOR

While it is true that a number of initiatives have been implemented which have ultimately impacted on Guyana's coastal biodiversity, many of these impacts were either incidental or indirect. There are very few local initiatives which have been specifically designed to address coastal biodiversity issues. There is therefore a clear need for more direct approaches when dealing with coastal biodiversity. There are many overlaps with marine biodiversity initiatives and actions, especially as they relate to the fisheries sector. Coastal biodiversity resources, however, require a greater integrated approach to address the many cross-cutting issues that are very relevant to coastal biodiversity.

While this integrated approach is possible through the ICZM Action Plan, there are many constraints that have hindered the full success of its implementation. To improve the effectiveness of this approach, there needs to be a greater collaboration between line agencies and also the greater availability of resources to implement the proposed actions.

A brief initial analysis of stakeholder comments and review of existing documents have resulted in the identification of a number of areas where improved action can lead to a more integrated approach to management for sustainable use and conservation of coastal biodiversity.

Resource Inventories and Awareness

Over a decade on from Guyana's ratification of the UNCBD, there is still little understanding of biodiversity and biodiversity issues in relation to the coastal area. Very little information is available in terms of coastal resource inventories. This limits the awareness of the types of biodiversity resources present in coastal areas. Their true value and importance therefore may be underestimated.

To improve the level of awareness of coastal biodiversity, there is need for resource inventories to be prepared. Such information stand a very good chance of enhancing and supporting awareness programmes to foster a better understanding of coastal biodiversity issues. Through such an awareness, there could be changes in attitudes, and hence practices, at the local level to promote sustainable use, management and conservation of coastal biodiversity.

Mainstreaming Biodiversity into Coastal Developmental Planning

In spite of efforts, to date, Guyana's obligation under the UNCBD and the activities required in relation to coastal biodiversity are to a large extent not known by the main institutions and stakeholders. There is a clear need for more awareness and coordination in the implementation of the UNCBD Marine and Coastal Biodiversity Work Programme among institutions. The time may be right to establish and strengthen a Coastal Zone Management Unit at the EPA which will be equipped specifically to deal with coastal and marine biodiversity issues.

Harmonization of Legislation

There are many agencies and institutions which have vested and varied interests in the coastal zone of Guyana and which have their own legislative framework. Many of these pieces of legislation have some impact on coastal and marine biodiversity. However, the difficulty is that many of these legislation are in conflict with each other; they are not harmonized, and at times, line agencies are not fully aware of where their institutional jurisdiction and mandate extend. This leads to ineffectiveness in many instances and often to nothing being done. There is an urgent need to address harmonization of legislation to specifically address coastal biodiversity. Policy and legislation regarding GMO's and alien species are also a matter that is now very critical. Intellectual property rights, access and benefit-sharing have been identified as important in safeguarding biodiversity within the coastal area.

Research and Information Collection

While there has been some effort to proceed with ICZM work through the ICZM Committee, there is a definite need to embark on research and data collection on the dynamics of coastal biodiversity. A number of research initiatives have been undertaken by agencies such as GFC, UG, NARI, SRDD and others that will have significant impact on coastal biodiversity. However, these have been limited due to constraints of human, financial and other resources to ensure effective implementation and continuity. There is need for greater collaboration on research among institutions.

Monitoring and Assessment of Coastal Biodiversity

There is a need to monitor biodiversity change within coastal areas and coastal ecosystems. Guyana's monitoring and assessment efforts have placed a lot of emphasis on flora and mega fauna. There is a lack of local expertise for lower plants, insects and soil flora and fauna despite their value as indicators of environmental change.

When conducting EIAs, there is often a limitation in the assessment of life forms such as lichens, insects, and other similar floral and faunal groups. What is needed is for research methodologies to be developed, tested, standardised and defined as much as possible so as to ensure that they are incorporated into the EIA process. This emphasis can assist the development of coastal biodiversity resource inventories.

Information Sharing and Management

There is a need for a concerted effort in a direct way to collect data and information on coastal biodiversity to support, enhance and improve coastal information and mapping.

The ICZM Action Plan articulated one of the most pressing and immediate actions required as the development of an integrated spatial database to assist with the information policy development, management and conservation of coastal resources. One of the data sets that would be collected is biodiversity data.

The implementation of a Geographic Information System is proposed to support sound policy development and planning decisions for improved management of coastal resources, infrastructure and the sustainable management of Guyana's coastal resources and coastal ecosystems. This will also improve national capacities for ICZM information management and dissemination through coordination, sharing, and the exchange and dissemination of relevant CZM information among core agencies and other stakeholders.

Institutional Strengthening and Capacity Building

There is a need to improve the number of staff, as well as attract more qualified personnel and to constantly build capacity. Concomitant with this is the need for additional financial resources to implement activities to foster a better understanding of biodiversity issues as they relate to the general context and also specifically for the coastal area.

Enabling Activities and the UNCBD

The enabling activities specified in the UNCBD are a useful guide for any country which is desirous in meeting its obligations under the UNCBD and which seeks to focus biodiversity in its development activities. These enabling activities are specific enough to serve as milestones against which progress can be measured. Each is related to a specific activity that can inform specific actions in addressing coastal biodiversity issues. These, therefore, represent important starting points for any strategy for implementation of the UNCBD and also for any development of initiatives to address coastal biodiversity issues.

4.4 MARINE AND INLAND WATER RESOURCES

4.4.1 UNCBD AND MARINE AND INLAND WATER RESOURCES

4.4.1.1 UNCBD and Marine Resources

The oceans cover 70 percent of the planet's surface area, and marine and coastal environments contain diverse habitats that support an abundance of marine life. Life in our seas produces a third of the oxygen that we breathe, offers a valuable source of protein, and moderates global climatic change. Some examples of marine and coastal communities include: mangroves; coral reefs; sea grasses; algae; pelagic or open-ocean communities; and, deep-sea communities.

In view of their common concern for the conservation and sustainable use of marine and coastal biodiversity, the Parties to the CBD agreed on a programme of action for implementing the Convention. The programme, called "Jakarta Mandate on Marine and Coastal Biological Diversity" was adopted in 1995.

Five key thematic issues were identified in the Jakarta Mandate. These issues are reflected in the programme elements of the work programme adopted in decision IV/5, and retained in the elaborated programme of work adopted in decision VII/5.

Programme Element 1.	Implementation of integrated marine and coastal area management (IMCAM).
Programme Element 2.	Marine and coastal living resources.
Programme Element 3.	Marine and coastal protected areas.
Programme Element 4.	Mariculture.
Programme Element 5.	Alien species and genotypes.
Programme Element 6.	General.

The activities within the Jakarta Mandate interact with a number of programme activities carried out by the Secretariat of the CBD, especially those planned and implemented in the context of sub-programmes dealing with "cross-cutting issues" or issues of an encircling nature, such as sustainable use of biological diversity. Among those issues, the most directly relevant to the Jakarta Mandate are:

- The Ecosystem Approach;
- Protected Areas;
- Climate Change;
- Traditional Knowledge;
- Biological Diversity Indicators;
- Global Taxonomy Initiative;
- Access to Genetic Resources and Benefit-sharing;
- Incentive Measures;
- Environmental Impact Assessment;
- Sustainable Use;
- Sustainable Tourism; and
- Alien Species.

4.4.1.2 UNCBD and Inland Water Resources

Inland water ecosystems are often extensively modified by man, more so than marine or terrestrial systems, and are amongst the most threatened ecosystem types of all. Physical alteration, habitat loss and degradation, water withdrawal, overexploitation, pollution and the introduction of Invasive Alien Species are main threats to these ecosystems and their associated biological resources. Forty-one percent of the world's population lives in river basins under water stress. More than 20 percent of the world's 10,000 freshwater fish species have become extinct, threatened or endangered in recent decades. This is a far greater proportion than for marine species.

Industrialisation, rapid economic development, and population growth have brought about transformations of these ecosystems and biodiversity loss on an unprecedented scale. There is an increasing concern for maintenance of the richness of inland water biodiversity and reducing the risks many species face so that the goods and services they deliver will be maintained. Whilst there is an ever increasing need and urgency for improved management of inland water ecosystems, demand for freshwater is rapidly increasing.

Inland Waters was adopted as a CBD thematic area at the fourth meeting of the COP in Bratislava. The Convention's inland waters programme promotes the ecosystem approach, including integrated watershed management, as the best way to reconcile competing demands for dwindling supplies of inland waters. It is essential that the maintenance of biodiversity is seen as being critical in the demand for freshwater use and it should be managed in coordination with other demands. The programme identifies the actions that Parties need to carry out to halt the trend of biodiversity loss including monitoring, assessment and evaluation of biological diversity of inland water ecosystems, conducting Environmental Impact Assessments (EIAs) of water development projects, development of pollution prevention strategies choosing and using appropriate technology, and promoting transboundary cooperation, ecosystem-based management and the involvement of local and indigenous communities at all appropriate levels.

The Programme of Work on Biological Diversity of Inland Water Ecosystems integrates with other work programmes and cross-cutting issues, particularly as freshwater is the major link between many different ecosystems and issues. It also promotes cooperation with other Conventions and organizations through Joint Work Plans, in particular the Ramsar Convention on Wetlands and the Convention on Migratory Species.

4.4.2 MARINE AND INLAND WATER RESOURCES WITHIN THE GUYANA'S NATIONAL DEVELOPMENT CONTEXT

4.4.2.1 Marine Resources

Regional Overview

Guyana's Marine Resources are contained within the region extending from the Amazon River to the Orinoco River on the north east coast of South America. Environmental factors such as oceanographic conditions and type of bottom are of prime importance in controlling the distribution of shelf fauna in this region.

The Institute of Marine Research, Bergen (1989) describes the situation thus. A main feature of the northeast coast of South America, east of Trinidad, is the enormous water discharge from the Amazon, Essequibo and Orinoco Rivers, carrying silt and soft mud which are partly deposited outside the river mouths and partly carried along the shelf by current and tides. Apart from the typical brackish water environments associated with the river mouths, the freshwater output is so big as to influence large coastal areas. The effect of water discharge from rivers affects the shelf to about 40 to 60 m. The mud deposits are the substratum for a rich invertebrate fauna forming the main food item of many fish and several species of sharks and rays. At greater depths, sandy rocky (old corals) grounds become predominant and the fauna changes accordingly to typical hard bottom lutjanid community. The shelf slopes gradually to about 100 m before it falls steeply into deeper waters.

Several species of shrimps are abundant here, some of which are restricted to the very shallow waters: the Atlantic seabob, *Xiphopenaeus kroyeri*, the southern brown shrimp *Penaeus subtilis,* and the southern white shrimp *Penaeus schmitti*. The red-spotted shrimp, *Penaeus brasiliensis,* and the southern pink shrimp, *P. notialis,* are found in deeper waters. Ground fishes are also abundant on the shelf while snappers are abundant on the outer shelf and continental slope.

Marine flora in the region have not been exploited until recently. The seaweeds in this region, as described in a field guide (FAO, 1993), are the green algae (*Chlorophyta*) having 40 genera with 130 species, the brown algae (*Phaeophyta*) having 27 genera with 99 species, and the red algae (*Rhodophyta*) having 115 genera with 275 species. In the coastal zone, there are also four species of mangroves.

Guyana's Marine Area

Guyana has a coastline of 432 km, and a continental shelf area of approximately 38,016 km^2. The total estimated area of the Fishery Zone (FZ) is 138.240 km^2 and this is identical to the Exclusive Economic Zone (EEZ) whose limit is 371 km (200 mi) from shore. The continental slope begins at a depth of roughly 100 m. The width of the continental shelf averages about 133 km.

The marine fishery is well developed. There is an offshore industrial trawl fishery, a semi-industrial snapper fishery, and an inshore artisanal fishery. This industry contributes significantly to the national economy in terms of providing employment, earning foreign exchange, and providing food for the nation.

Usage of Marine Resources

The marine fishery is founded on three types of operation:

1. The offshore industrial trawl fishery.
2. The semi-industrial snapper fishery.
3. The inshore artisanal fishery.

The Offshore Industrial Fishery consists of 146 trawlers, seven (7) fish/shrimp processing plants and numerous wharves and dry docking facilities. Forty-one trawlers are licensed to catch large penaeid shrimp and the remaining 105 are licensed to catch seabob. Ice and freezing facilities servicing this fishery are owned and operated by persons within and outside of the fishery sub-sector. Trawlers measure about 21 m in length and use double outrigger shrimp trawl nets, and operate in waters 14 to 91 m in depth over the seabed of mud, gravel or sand.

The Inshore Artisanal Fishery consists of approximately 1,129 vessels ranging in size from 6 to 18 m propelled by sails, outboard or inboard engines, and using gear that include chinese seine (a fyke net), pinseine (beach seine), cadell lines and handlines, drift seine and circle seine (modified gill nets). The larger vessels have ice-boxes and go on fishing trips that last as long as 18 days, while smaller vessels may or may not have ice boxes and their operations are either tidal or diurnal. Except for the large drift seine vessels which may or may not be decked, most artisanal vessels are flat-bottomed, dory type vessels that afford great manoeuvrability over shallow muddy and sandy bottoms.

There are about 4,600 small-scale fishermen. Of these, about 1,000 are boat owners, with sixty to seventy (60-70) percent of the boat owners being members of Fishermen's Cooperatives (8 in all) which acquire and sell fishing requisites to their members. With assistance from CIDA and the EU, onshore infrastructure (wharves, ramps, workshops fuel depots, requisite shops, ice machines, and fish storage bins) were constructed at eight sites along the coast for this fishery (Fisheries Department statistics).

The semi-industrial snapper fishery using inboard engines and decked vessels exploit the deep slope resources using traps. Approximately 80 such vessels operate.

In summary, the commercial species are shrimp (seabob and prawns), groundfishes, and deep slope species (snappers). Pelagics with the exception of sharks are not targeted species. A modest artisanal fishery exploits three species of crabs.

Exploitation of marine resources contributes significantly to the national economy. The fishing industry's contribution to the GDP was 1.59% in 2003 and it is a net contributor to Government Revenues. It employs an estimated 10,500 fishers and processors; landed 18,391 metric tonnes of shrimp and 32,386 metric tonnes of finfish in 2005; and, exported 21,757 metric tonnes of seafood. A per capita consumption of 9-27 kg between 1980-1988, 45 kg in 1991, and 58.7 kg in 1999 indicates the importance of this sector to food security. The industry's activities span the entire coast where there are over 100 landing sites and seven large processing plants on the East Bank of Demerara.

Table 9. Import/Export Levies Collected from Custom and Excise for 2005.

	FISH (G$)	SHRIMP (G$)	TOTAL (G$)
JAN-DEC	$35,139,494	$454,417	$35,593,911

Table 10. Fish Exports.

	2000	2001	2002	2003	2004	2005
TOTAL (mt)	NA	11,627	18688	19310	21,901	21757

Table 11. Fish Production (mt).

	2000	2001	2002	2003	2004	2005
Total Shrimp (mt)	19,329	29,857	22,057	22,593	18,605	18,391
Total Fin-Fish (mt)	30,278	26,923	25,186	33,724	37,073	32,386

Source: Department of Fisheries, Ministry of Agriculture

4.4.2.2 Inland Water Resources

Like the wider Amazon, the rivers and wetlands of the Guianas hold some of the greatest concentrations of freshwater biodiversity in the world. The freshwaters of the Guianas contain a large number of endemics, and represent important habitats for endangered species such as giant river otter, manatee, and dolphin. Many of the more than 590 species of fish found in the Guianas are endemic. Although few comprehensive scientific studies have been made of the more remote areas, there are an estimated 230 freshwater fish species from the Marowijne River system alone, of which about 15 may be found nowhere else in the world. Sixty-five percent of the world's largest freshwater mammal species are in the Neotropics, and nearly all are represented in the Guianas (WWF Press release, 2007).

Guyana gets its name from the Amerindian word that translates to "land of many waters". As the name suggests, there is a complex system of rivers, creeks, lakes, waterfalls and other water bodies within the country's borders. It is one of eight countries sharing the Amazon Basin. Its main river, the Essequibo, is one of the principal rivers of South America with a mean flow of 2,100 $m^3 s^{-1}$. Much of the hinterland area is drained directly or by major tributaries of the Essequibo and fresh surface water is generally plentiful for most of the year.

There is a complex drainage and irrigation network encapsulating three water conservancies established to capture, store and distribute rainfall water from the Guyana's Highlands to Coastal Guyana to support agriculture. These conservancies are relatively shallow but extensive reservoirs covering several hundred square kilometres. This system is monitored by the National Drainage and Irrigation Authority.

Freshwater ecosystems are currently in relatively good condition as their watersheds are still protected by large areas of pristine forests and their natural watercourses are mostly unaltered by dams and other water infrastructure. Likewise, the freshwater habitats are relatively intact and support generally stable freshwater species populations. In addition to their ecosystem functions, they also provide services of freshwater for domestic use by interior and coastal communities; transportation, often the sole means for access to the scattered interior communities, as well as for the transport of commercial goods (timber quarry materials and other commodities); water for industrial uses like mining (gold, diamond, bauxite); fisheries; irrigation water for agriculture; tourism and recreation; natural flood control and replenishment of aquifers; and spiritual and cultural value, especially to indigenous communities.

<u>Usage of Inland Water Resources</u>

Commercial fishing in the interior is relatively new but has grown rapidly. It includes the capture and sale of some species, e.g., arapaima, hassar and the lukunani, the latter being also targeted by sport fishermen. The extent of this activity, including the hunting of the other aquatic resources, requires some assessment and control.

The Inland Subsistence Fishery involves the catching of fish in rivers, lakes, canals flood plains, etc. by subsistence or part-time fishermen for their own consumption or for sale. This activity tends to be influenced by the season and in some areas by the down periods for agricultural and other activities. For example, in the sugar estate areas, the intensity of activity varies with the sowing and harvesting of the sugar cane. Small flat-bottomed type vessels and cast nets, seines or handlines are used in the exploitation of the fish.

There is a small but active inland fishery for ornamental fish**.** Live fish are caught in the upper reaches of the rivers by collectors and brought and sold on the coast to exporters of ornamental fish. The fish are exported mainly to the U.S.A.

Brackish water culture is done in empoldered areas on the sea shore along the Corentyne coast and may require the legal or illegal opening of the sea defences. Taking advantage of inflows of high tides, juveniles, larvae, eggs, etc. are trapped in these coastal empoldered swamps where they are allowed to mature to marketable size. Many species are contained in the seawater, with some of the targeted ones being swamp shrimp (*Mesopenaeus tropicales*), snook (*Centropomus undecimalis*), cuffum (*Megalops atlanticus*) and mullet (*Mugil spp.*). These brackish water farms operate as extensive polyculture systems.

Towards the end of 1980, there were sixty-four farms, which included two registered fish culture cooperatives, utilizing approximately 670 ha of coastal lowlands. The average size of a farm was 11 ha. In 1987, it was estimated that 91mt of fish and shrimp were harvested from 400 ha of these swamps.

Freshwater aquaculture was first started in the late 1940's with introduction of Mozambique Tilapia. It was thought that fish culture could be undertaken in association with agricultural practices, such as fish in irrigated rice fields, or flooded sugar cane fields. At present, there is a project exploiting this type of culture. Also, the hundreds of kilometers of irrigation canals offered a ready possibility for undertaking freshwater aquaculture.

In the 1970's, three stations were established by the Department of Fisheries and a joint IDRC/GUYSUCO venture. The government stations supplied tilapia for close to 500 private ponds in the country in the 1980s. This type of culture produced an estimated 34 mt of fish in 1987 from about 115 ha of ponds.

At present, it is estimated that about 100 persons are involved in aquaculture as a part-time activity. Most of these persons are involved in brackish water culture in Region 6 while freshwater aquaculture is practiced mainly, but not entirely, in Regions 2-6.

4.4.3 MARINE AND INLAND WATER RESOURCES AND GUYANA'S NBAP

Guyana's NBAP, in Section 4.2.4, makes reference to inland aquatic and marine biodiversity, recognising that *'a significant part of the natural patrimony of Guyana consists of waterscapes, both inland and marine'*. The NBAP advocates for the preparation of watershed management plans, either separately or part of current required plans such as forest management plans. Reference is also made to the fisheries sector as part of the NDS, and the need for a national fisheries policy to encompass marine as well as inland fisheries. A draft Fisheries Management and Development Plan (1994-2004) is mentioned and the need for its finalisation, as well as new draft legislation (Fisheries Bill, Aquaculture Bill), and the need for their enactment. Notwithstanding this, the NBAP does not propose specific actions for marine and inland aquatic biodiversity.

4.4.4 MARINE AND INLAND WATER RESOURCES AND BIODIVERSITY IN GUYANA

4.4.4.1 Threats to Marine Biodiversity

Most stakeholders posit that the level of exploitation of the fisheries resources represents the major threat to marine diversity. There is the perception of over-exploitation and the threat of depletion of some commercial species. The prawn resource (*Penaeus sp*) has been over-exploited, and the seabob *(Xiphopeaeus kroyeri)* resource is of great concern following a rapid increase in the size of the fleet and a decrease in total yield and average size of individuals caught. Also, this fish resource is demanding greater fishing effort to maintain the same level of catch. The snapper resource which is transboundary (like all of the above) requires a regional assessment because of the number of national fleets involved in this fishery in all the countries and because the catch may not be landed in the country where it was fished.

Actions Being Taken – Marine Biodiversity

A framework exists for management and regulation of the marine sector within which there are considerations for the biodiversity value. These are outlined as follows:

Policy and Planning

The need to manage our fisheries resources in a sustainable manner so as to protect and preserve it for future generations is of significant importance. A Fisheries Management Plan (FMP) has been developed. It promotes the conservation and sustainable development of the fisheries resources of Guyana, provides information on a fisheries policy, guiding principles, goals, the legal and institutional framework for fisheries management and development, including aquaculture, and the outlines specific management action plans for the fisheries of Guyana.

This FMP is intended to be used in conjunction with the Fisheries Act 2002 and Fishery Products Regulation 7, 2003, with the lead agency for its implementation being the Fisheries Department. It is an update of the 1992 Draft FMP, and the 1995 GoG/CIDA National Fisheries Management and Development Plan. It has been guided by Chapter 13 of the NDS and reflects to a large extent the recommendations coming out of the national fisheries consultations on marine fisheries management and aquaculture development held in 2000 and 2002, as well as the November 2005 and 2006 National Consultations on the Draft FMP for the Fisheries of Guyana.

The Draft Fisheries Management Plan (FMP) proposes a number of projects, all of which are scheduled to commence implementation during 2007 after the plan has been approved. These projects aim at institutional strengthening and capacity building, generating information for fisheries management, introducing fisheries management regimes for some fisheries, and exploring possibilities for new fisheries targeting underutilised species.

Institutional Framework

There are a number of institutions and organizations that have some responsibility for monitoring and controlling the use of marine biodiversity. These include:

The Ministry of Agriculture - lead agency responsible for fisheries management and development in both marine and inland waters. Its Department of Fisheries executes this mandate *via* authority vested in it through the Fisheries Act 2002 (which replaces the 1959 Fisheries Act and portions of the 1977 Marine Boundaries Act) under the following provisions:

- Authorizing the Minister to promote the development and management of fisheries to ensure the optimum utilization of fisheries resources;
- Mandating the Chief Fisheries Officer to prepare and keep under review a plan for the management and development of fisheries, including consultations with fishermen and others stakeholders;
- Creation of a Fisheries Advisory Committee;
- Procedures for licensing fish processing establishments, dispute settlement in fisheries, and for foreign and local licensing; and
- Measures to facilitate compliance with international Conventions.

Fisheries Advisory Committee (FAC) is to advise the Minister on fisheries issues. The FAC was established in 1986 and was active until 1988, then resuscitated in 1994 under the chairmanship of the Permanent Secretary in the Ministry responsible for fisheries. Also on the Committee were representatives from the Fisheries Department, the industrial and artisanal marine fisheries sub-sectors, the Guyana Coast Guard, and the aquaculture sub-sector. This body became dormant but has been recently reconstituted with legal authority as a result of the 2002 Fisheries Act.

The Guyana Defence Force Coast Guard and Guyana Police Force Marine Police undertake fisheries enforcement.

Ministry of Foreign Affairs is responsible for international access agreements with other nations' fishing vessels.

Ministry of Health: Units dealing with quality assurance and safety in fisheries are the Veterinary and Public Health Unit, Food and Drug Department, and the Environmental Health Unit.

Mayor and City Council certifies holding rooms and freezing facilities.

Guyana National Bureau of Standards ensures maintenance of product standards.

The Environmental Protection Agency has as part of its mandate to maintain a programme for the conservation and sustainable use of biological diversity in Guyana; its cross-sectional programmes include Integrated Coastal Zone Management and Climate Change.

New Guyana Marketing Corporation provides market facilitation services to the private sector for the export of non-traditional agricultural produce; also, developing and disseminating post-harvest technology and providing appropriate market research.

Customs section of the Guyana Revenue Authority deals with the importation and exportation of seafood, registration of coastal vessels, collection of levies, and granting concessions on materials and equipment to be imported.

Maritime Administration is responsible for inspection and issuance of Sea Worthiness Certificates for Vessels, and enforces safety regulations and licensing of captains.

Hydrometeorological Service is responsible for observing, archiving and understanding Guyanese weather and climate, and providing meteorological, hydrological and oceanographic services in support of Guyana's national needs and international obligations.

Institute of Applied Science and Technology provides laboratory services in testing for heavy metals in fish and fish products.

Statistical Bureau is responsible for the conducting of censuses, the collection, compilation, analysis and publication of certain statistical information and for other matters relating thereto.

The Guyana Association of Trawler Owners and Seafood Processors (GATOSP) is an organization whose membership is all trawlers owners and the owners of the large shrimp and fish processing plants. Sustainable operations remain its focus.

The Guyana Marine Turtle Conservation Society (GMTCS) focuses on activities designed to protect the four species of marine turtles that nest on the beaches in North West Guyana and may be caught by fishers.

At the Regional level, the following arrangements prevail:

Caribbean Regional Fisheries Mechanism (CRFM) was created by CARICOM to promote and facilitate the responsible utilization of the region's fisheries and other aquatic resources for the economic and social benefits of the current and future population of the region.

International Committee for the Conservation of Atlantic Tunas (ICCAT) - is an inter-governmental fishery organization responsible for the conservation of tunas and tuna-like species in the Atlantic Ocean and its adjacent seas. Guyana contributes catch and effort statistics and participates in ICCAT's research programmes. In 2002, Guyana sought and acquired Cooperating Party status in ICCAT.

FAO's Western Central Atlantic Fishery Commission (WECAFC) has the objective to facilitate the coordination of research, encourage education and training, and assist its members in establishing rational policies to promote the rational management of resources that are of interest for two or more countries. The Commission has an advisory management function but has no regulatory powers. It formed an *Ad Hoc* Working Group in 1988 that has been conducting reviews of the marine shrimp and groundfish fisheries of the Brazil-Guianas shelf.

Specific Initiatives

There are a number of specific initiatives being undertaken to address the issue of biodiversity within coastal resources.

GMTCS with help from the Audubon Society introduced wardens to prevent poachers from raiding the turtle nests and to record data on nesting turtles, etc. WWF, working with GMTCS, funded many projects including a Situation Analysis Study on Shell Beach becoming a Protected Area. The Ministry of Agriculture, urged by GMTCS, declared a

closed area for drift seine operations during the nesting period of the turtles. Also, in keeping with USA's regulations, the Ministry through its Fisheries Department employs TED inspectors who ensure that trawlers use Turtles Excluder Devices (TED) which would permit the turtles to escape from the net during trawling operations.

With respect to over-exploitation of the shrimp resources, the Guyana Association of Trawler Owners and Seafood Processors (GATOSP) have been working with the Ministry of Agriculture (DOF) to limit the size of the trawling fleet and to enforce a closed season for trawling. Both measures require refinement. In limiting the number of vessels, there is the problem of licences to trawl being kept by fishermen who seek to re-enter the fishery. The closed season was a precautionary measure introduced without enough data to determine the most effective period to close.

The exploitation of shark is an international issue. Within the framework of the Code of Conduct for Responsible Fisheries, an International Plan of Action (IPOA) for sharks was elaborated because of the heavy exploitation of sharks which have a close stock-recruitment relationship and long recovery times in response to over-fishing. Conservation and management of sharks are impaired by lack of accurate data on catch, effort, limited information on the biological parameters of many species, and their identification (FAO).

4.4.4.2 Threats to Inland Water Resources

The water resources and ecosystems functions are increasingly being threatened by activities such as pollution, deforestation, overuse and infrastructure development. The lack of resources needed to manage these threats is a problem to government while at the community level, in addition to the lack of resources, there is little or no support to conserve the resources from these threats which are mainly from external influences. Some specific issues are identified below.

Logging and mining pose serious threats to the water resources and biodiversity therein. Both activities contribute to the degradation of the water resources and possible loss of biodiversity. Logging, by enabling erosion and the consequent heavy sediment discharge into water bodies, and mining by releasing mercury and chemicals in addition to sediments into the water bodies, thereby change the status of the environment, disrupting ecosystems, destroying the biodiversity therein and threatening the lives of inhabitants in the communities that depend on the water system. Some stakeholders are concerned about logging concessions being proposed for the North Rupununi areas in particular, and the state of some rivers, e.g. Cuyuni, Mazaruni, Barima, and Barama, as a result of mining operations. The effects of the cyanide spill from Omai are still not completely known while mercury which accumulates and concentrates in the flesh of the fish, increases in fish higher up the food chain, and pose a serious problem since the fish may be eventually eaten by humans.

Agriculture activities on the coastland also contribute to the degradation of water resources in that area through use of chemicals to control diseases, etc.

Some developmental activities also threaten to disrupt the pristine conditions and could result in loss of biodiversity in some areas.

The literature suggests that for this South America region, the possible impacts of climate change could be decreasing rainfall and increasing evaporation which can lead to lower water levels in the rivers and intrusion of salt water further inland.

Action Being Taken – Inland Water Resources

Actions being taken to address the issue of biodiversity within inland water resources management include:

Policy and Planning

As compared to marine fisheries, inland fisheries management has not received as much attention and focus at the policy and planning level. This, however, is changing. According to the Department of Fisheries, an Inland Fisheries Management Plan is to be developed and implemented. This activity is programmed to start in 2007.

At the institutional level, apart from the work of the Mon Repos Fish Culture Station on aquaculture research, much of the work on the ground as it regards inland water resources management, has been spearheaded by NGOs, in particular Iwokrama, WWF, Conservation International in collaboration with Government Agencies, and local communities.

Regulations and their enforcement with respect to inland water resources use and activities are limited. However, there is growing recognition of the need for integrated water resources management.

Specific Initiatives

Iwokrama has been working in the North Rupununi to conduct fish surveys of the waterways around the Iwokrama forest and on an Aquarium Fishery Project in partnership with the North Rupununi District Development Board and local communities. The fish surveys have revealed a very high diversity of fish,

Conservation International provides support to the monitoring of Arapaima in the Rupununi River, watershed management in the Upper Essequibo, and water quality monitoring in the Essequibo watershed.

An Arapaima Management Plan was recently launched. Spearheaded by Iwokrama and in collaboration with the NRDDB, this plan seeks to increase the local Arapaima (*Arapaima gigas*) population and consequently income of local fishermen, and to improve local organisations and institutions in the North Rupununi.

Efforts are being made to promote the North Rupununi Wetlands as a Ramsar site, and to urge Government to accede to the Ramsar Convention. In 2000, a national workshop was held and two priority sites, Shell Beach and the North Rupununi Wetlands, were identified as possible Ramsar sites. A North Rupununi Wetlands Project, with funding from the Darwin Initiative, and in collaboration with the Open University, EPA, Iwokrama, and the NRDDB, has produced a North Rupununi Adaptive Management Plan for the sustainable use of that ecosystem.

There is much focus on developing aquaculture with on-going research and demonstration at the Mon Repos Fish Culture Station (DOF), pilot projects on mixed farming (rice cultivation/tilapia production), and promotion of aquaculture by the National Aquaculture Association of Guyana. An Aquaculture Plan and Bill are to be completed. The Department of Fisheries has programmed this activity to end during 2007 since work has already started and there is a draft Bill to be considered.

The Amazon Cooperation Treaty Organisation (ACTO) project "Integration and Sustainable management of Transboundary Water Resources in the Amazon River Basin" is programmed for implementation.

4.4.5 GUYANA'S PROGRESS ON THE UNCBD MARINE AND INLAND WATERS BIODIVERSITY WORK PROGRAMME

Annex II-D provides a status of Guyana's efforts to implement activities as part of the Marine and Inland Waters Biodiversity Work Programme.

4.4.6 IMPROVING THE FOCUS ON BIODIVERSITY WITHIN THE MARINE AND INLAND WATERS RESOURCES SECTOR

As with some other sectors, there are a number of initiatives which indirectly address the issue of biodiversity. In order to give focus on biodiversity within this sector, consideration should be given to introducing activities in some areas as identified below:

Awareness and Education

There is need for a better understanding of biodiversity and for the understanding of conservation efforts. In the marine sector, some resource users are still of the view that fish stocks cannot be easily depleted irrespective of increasing fishing effort and, that the sea can absorb any level of pollution. Conversely, users of inland water resources understand that man's activities threaten the resources but should be permitted for perceived economic reasons. There is need to educate the public of the value and benefits derived from biodiversity in this sector, the range of biodiversity existing therein, and the reasons to ensure sustainable usage.

Enforcement

Laws and regulations that are in place are not being enforced, resulting in abuse.

Legislation

The Fisheries Act (2002) addresses issues in the marine environment. There is need to develop legislation to direct or guide inland waters activities and aquaculture in particular.

Institutional Strengthening and Capacity Building

The Fisheries Department, Ministry of Agriculture, is the primary institution regulating the use of biodiversity in the marine and inland water resources sector. That agency is in need of rebuilding by acquiring trained and qualified staff to fill the vacant positions which will then enable it to better perform core functions and to better respond to challenges.

Promote Sustainable Initiatives

Management of the use of the resources must be addressed. Commercially exploited species in both the marine and inland waters are threatened. The destructive effects of logging, mining and agricultural practices on biodiversity in inland waters warrant attention, and systems to reduce their impact should be developed.

Monitoring

The regulatory agencies should consider programmes to determine the status and trends in the resources being exploited and to measure the effect that industrial practices have on this sector's biodiversity.

Research and Information

There is a need to improve on the knowledge of biodiversity in this sector. Thus, developing inventories and conducting assessments are important goals.

Data Collection

Exploiters of the resources should submit data on their activities where systems are in place for them to do so, e.g. fishers must submit catch and effort statistics to the Fisheries Department. Information obtained from collating and analyzing the data should be fed back to the users. If no system is in place, one should be developed.

5. PROGRAMME AREAS

The findings and recommendations of the Situation Analysis exercise were presented to stakeholders at a national workshop held on March 1, 2007. As outlined in Section 3, many of the recommendations for each of the thematic areas are cross-cutting and consistent with the results of the National Capacity Self Assessment (NCSA) process which also developed a National Strategy and Action Plan *for Synergistic Environmental Capacity Development for Biodiversity, Climate Change and Land Degradation.*

Stakeholders at the workshop identified for each Thematic Area, Programme Areas and activities for action. Working groups for each of the four thematic areas, ranked the programme areas into high and medium priorities. These are presented below.

Table 12. Ranked Programme Areas by Workshop working groups.

Programme Areas	Thematic Areas			
	Agriculture	**Forestry**	**Marine and Inland Water Resources**	**Coastal Resources**
HIGH PRIORITY				
Awareness and Education	✓	✓		✓
Promote Sustainable Initiatives	✓	✓	✓	
Mainstreaming Biodiversity	✓			
Research and Data Collection, Information Sharing and Management	✓	✓	✓	✓
Institutional Strengthening /Human Resources Capacity Building	✓	✓	✓	✓
Awareness and Education	✓	✓		✓
Promote Sustainable Initiatives	✓	✓	✓	
Mobilization of Financial and Technical Resources		✓		
Economic Alternatives		✓		
Integrated Land-Use Planning		✓		
Consolidation of the Policy, Legal and Administrative Framework		✓	✓	
In situ and *Ex situ* Conservation of Biodiversity		✓		
Enforcement			✓	
Management (Freshwater Management Plan)			✓	
Monitoring			✓	✓
Habitat Destruction and Associated Impacts				✓
MEDIUM PRIORITY				
Policy and Legislation	✓			✓
Monitoring	✓			
Integrated Land-Use Planning		✓		✓

Programme Areas	Thematic Areas			
	Agriculture	**Forestry**	**Marine and Inland Water Resources**	**Coastal Resources**
Cultural Value and Forests		✓		
Enforcement		✓		
Technology Transfer		✓		
Research and Data Collection, Information Sharing and Management			✓	
Awareness and Education			✓	
Accession to Ramsar Convention			✓	
Livelihood Issues			✓	
Demarcation of Coastal Zone				✓
Sectoral Linkages				✓
Impacts of offshore and Inland Activities: mining, logging, and oil exploration				✓

There was general consensus among stakeholders at the workshop that many of the priority programme areas were cross-cutting among the thematic areas (as reflected in the above Table).

With guidance provided by the stakeholders, and concurrence and approval of the EPA, the following programme areas were identified for the development of project concepts and log frames.

Cross-Cutting Programme Areas

1. Consolidation of the Policy, Legal and Administrative Framework.
2. Institutional Strengthening/Human Resources Capacity Building.
3. Mainstreaming Biodiversity.
4. Integrated Land Use Planning.
5. Awareness and Education.
6. Research and Data Collection, Information Sharing and Management.
7. *In situ* and *Ex situ* Conservation of Biodiversity.
8. Monitoring.

Other Programme Areas

9. Promoting Sustainable Initiatives in the Agriculture Sector.
10. Promoting Sustainable Initiatives in the Forestry Sector.
11. Habitat Destruction and Associated Impacts on Coastal Resources.
12. Promoting Sustainable Initiatives in the Marine and Inland Water Resources Sector.

For each of the 12 Programme Areas, one project concept and log frame was prepared. The identification of the individual projects was based on recommended actions from the situation analysis findings and workshop working groups. For the cross-cutting programme areas, the projects identified are generally of a broad scope to cover all four thematic areas. A justification for each project is provided within the concepts as detailed in Section 6.

These 12 projects form the basis of NBAP II over the period 2007-2011 and their implementation will facilitate meeting UNCBD objectives as well a meeting the Work Programme requirements for these four thematic areas.

Table 13. Summary of Projects – NBAP II.

Programme Area	Project	Key Outputs	Executing Agency	Time Frame
Consolidation of the Policy, Legal and Administrative Framework.	Consolidating the policy, legal and regulatory, and administrative frameworks in Guyana that will support the sustainable use, protection, and management of the country's biological diversity.	1. Assessment of Policy, Legal and Administrative Frameworks for biodiversity management by June, 2008. 2. Assessment of structures required by institutions for the new harmonized Policy and Legal Framework by August, 2008. 3. Government Approval of Assessment Findings by December, 2008. 4. Revised Policies and Laws by June, 2010. 5. Streamlined Institutions Structures and Mandates by December, 2010.	Environmental Protection Agency	Three Years (2008-2010)
Institutional Strengthening/Human Resources Capacity Building.	Fostering effective and sustainable management of the Guyana's biological diversity through optimum human resources deployment and management.	1. Assessment of Skills by June, 2008. 2. Strategic Human Resources Plan for recruitment, use and retention of skills by December, 2008. 3. Capacity building exercises within and amongst institutions beginning June, 2009. 4. Assessment, procurement and use of relevant equipment and technologies beginning January, 2010.	Environmental Protection Agency	Three Years (2008-2010)
Mainstreaming Biodiversity.	Integrating biodiversity issues and activities into strategic and operational planning of key responsible agencies.	1. List of responsible agencies by December, 2007. 2. Review of agencies' planning cycles by March, 2008. 3. List of key biodiversity issues allocated to agencies by June, 2008. 4. Report on collaborative approaches to integrate biodiversity issues by September, 2008. 5. Written guidelines for monitoring integration of biodiversity issues into agencies' plans by December, 2008.	Environmental Protection Agency	One Year (2007-2008)
Integrated Land Use Planning.	Development of planning and operational guidelines for synergistic utilisation of natural resources in the State Forests of Guyana.	1. Identified Pilot Area produced by December, 2007. 2. Description of land-use and GIS maps of Pilot Area by December, 2007.	Guyana Forestry Commission	Two Years (2007-2009)

Programme Area	Project	Key Outputs	Executing Agency	Time Frame
		3. Report on planning procedures by June, 2008. 4. Written guidelines on best practice by December, 2008. 5. Model land-use plan by June, 2009. 6. List of criteria and indicators by December, 2009.		
Awareness and Education.	Developing an Integrated Information, Communication (IEC) System for Biodiversity Conservation and the execution of an Awareness Programme to support the sustainable use, protection and management of Guyana's biological diversity.	1. Situation Analysis of previous biodiversity education and awareness efforts by June, 2008. 2. Training Programme and Materials by December, 2008. 3. Execution of Training Programme by December, 2009. 4. Biodiversity Conservation Awareness and Information Network System developed by June, 2010.	Environmental Protection Agency	Three Years (2008-2010)
Research and Data Collection, Information Sharing and Management.	Strengthening the framework for biodiversity research, data collection, information sharing and management in Guyana.	1. Situation Analysis on the extent of data collection and research on biodiversity by June, 2008. 2. Examination of current arrangements for institutional collaboration and cooperation for biodiversity information collection, sharing and management by December, 2008. 3. Initiatives to strengthen the current system for biodiversity information sharing and management beginning by January, 2009.	Environmental Protection Agency	Two Years (2008-2009)
In situ and *Ex situ* Conservation of Biodiversity.	Consolidating *in situ* and *ex situ* conservation of Guyana's biological diversity for effective use and management.	1. Coordinated and expanded *ex situ* conservation activities by December, 2008. 2. Consolidated research and development programs for *in-situ* conservation of biodiversity by December, 2009. 3. Development and expansion of Guyana's Protected Areas System (GPAS) beginning by January, 2008.	Environmental Protection Agency	Four Years (2008-2011)
Monitoring.	To improve biodiversity monitoring across sectors and to develop a feedback cycle to guide the implementation of biodiversity work programmes.	1. Review the "Draft Strategy for Biodiversity Monitoring and Sector Indicators" and identify indicators across the four thematic areas under NBAP II by June, 2009. 2. Conduct pilot demonstration on the application of the indicators within a selected thematic area by December, 2009. 3. Develop and Implement a Monitoring and Evaluation	Environmental Protection Agency	Two Years (2009-2010)

Programme Area	Project	Key Outputs	Executing Agency	Time Frame
		Mechanism for the four Thematic Areas based on use of indicators by June, 2010.		
Promoting Sustainable Initiatives in the Agriculture Sector.	Promote and support the development of sustainable initiatives in agriculture through the development of organic agriculture with focus on Region 1, Guyana.	1. Assessment of the progress of organic agriculture in Guyana by June, 2009. 2. Strategy and Action Plan (SAP) for the promotion and development of Organic Agriculture in Guyana using Region 1 as pilot study by December, 2009. 3. Implementation of the Strategy and Action Plan beginning by June, 2010.	Environmental Protection Agency	Three Years (2009-2011)
Promoting Sustainable Initiatives in the Forestry Sector.	Develop protocols and project concepts for the sustainable and economic utilisation of Non-Timber Forest Products (NTFPs) in hinterland communities in Guyana.	1. Report on success stories in NTFP utilisation by December, 2007. 2. List of NTFPs in Guyana of potential economic value and potential markets by June, 2008. 3. Outreach and awareness programme to selected communities by December, 2008. 4. Protocols for sustainable utilisation of NTFPs by communities by June, 2009. 5. Community specific project concepts and potential funding sources by December, 2009.	Guyana Forestry Commission	Two Years (2007-2009)
Habitat Destruction and Associated Impacts on Coastal Resources.	The effective management of Guyana's coastal biodiversity to minimize and prevent the destruction of coastal habitats and protect Guyana's coastal biological diversity.	1. Inventory of major coastal habitats and ecosystem types by June, 2008. 2. Rapid ecological status assessment to determine richness of biodiversity of the coastal habitats by December, 2008. 3. Biogeographic assessment of coastal habitats to identify priority areas for action by June, 2009. 4. Assessment of the demand and uses, economic, social and cultural, to which coastal habitats and ecosystems in Guyana are put by December, 2009. 5. Training of relevant officers in rapid assessment techniques by June, 2010. 6. Workshops to sensitise stakeholders on activities and	Environmental Protection Agency	Three Years (2008-2010)

Programme Area	Project	Key Outputs	Executing Agency	Time Frame
		issues regarding coastal habitats, impacts, monitoring and management measures for maintaining ecosystem, and habitat integrity by December, 2010.		
Promoting Sustainable Initiatives in the Marine and Inland Water Resources Sector.	Promoting sustainable initiatives in the marine and inland water resources sector.	1. Plan of Action for implementing Seabob Management Strategy by June, 2008. 2. Government approval of Management Strategy by September, 2008. 3. Establish legal framework for the implementation of the Strategy by March, 2009. 4. Implementation of Strategy beginning by April, 2009.	Ministry of Agriculture, Fisheries Department (DOF)	Two Years (2008 - 2009)

6. PROJECT CONCEPTS AND LOG FRAMES

6.1 PROGRAMME AREA 1 - POLICY, LEGAL AND ADMINISTRATIVE FRAMEWORK (CROSS-CUTTING ISSUE)

Project Title

Consolidating the policy, legal and regulatory, and administrative frameworks in Guyana that will support the sustainable use, protection and management of the country's biological diversity.

Project Justification

NBAP had recognized the need to address the consolidation of the policy, legal and administrative framework for biodiversity management and had established a Programme Area under Phase I Foundation Programmes. The Stock Taking and Thematic Assessment exercise for UNCBD as part of the NCSA also recognized this as a priority issue. In spite of initiatives, there are still gaps and overlap in the policy and institutional framework for biodiversity management; legislation is in need of updating, and, in some instances, inadequate to take on board recent developments in biodiversity. For these reasons, this project is critical to the successful implementation of actions to meet UNCBD obligations.

Project Summary

The objective of this project is to review, consolidate and harmonize, and revise the current policy, legal and administrative frameworks for biodiversity management in Guyana, by 2010. It is recognized that while policies exist, the legal and administrative framework is weak, overlapping and, in some instances, not clearly defined. This project will seek to review and revise policy instruments to reflect policy issues relating to the CBD, review the current legislative and administrative frameworks, and capitalise on opportunities that exist for integrating cross-cutting issues within laws and regulations. At the same time, it will seek to: streamline and harmonise sector specific environmental regulations and develop stronger collaborative relationships between the CBD focal point and other agencies; streamline institutional arrangements to ensure optimal use of limited resources in NBAP II implementation and management; and meet the obligations of the CBD.

Project Duration

Three Years (2008-2010)

Executing Agency

Environmental Protection Agency

Collaborative Institutions

Natural Resources and Environment Advisory Committee
Guyana Forestry Commission
Guyana Geology and Mines Commission
Guyana Lands and Surveys Commission
Guyana Energy Agency
Ministry of Agriculture

Outputs

1. Assessment of Policy, Legal and Administrative Frameworks for biodiversity management by June, 2008.
2. Assessment of structures required by institutions for the new harmonized Policy and Legal Framework by August, 2008.

3. Government Approval of Assessment Findings by December, 2008.
4. Revised Policies and Laws by June, 2010.
5. Streamlined Institutions Structures and Mandates by December, 2010.

Activities

Output 1. Assessment of Policy, Legal and Administrative Frameworks for biodiversity management by June, 2008.

Develop Terms of Reference for Legal/Policy Expert to conduct assessment.
Recruit Legal/Policy Expert.
Legal/Policy expert to review report done by the National Capacity Self Assessment (NCSA) Project.
Conduct assessment using participatory approach.

Output 2. Assessment of structures required by institutions for the new harmonized Policy and Legal Framework by August, 2008.

Develop Terms of Reference for Institutional Expert to conduct the assessment.
Recruit Institutional Expert.
Conduct assessment using participatory approach.

Output 3. Government Approval of Assessment Findings by December, 2008.

Submit assessments (1 and 2) for Cabinet approval.

Output 4. Revised Policies and Laws by June, 2010.

Develop Terms of Reference for legal expert(s).
Recruit Legal Expert(s).
Revise Policies and Laws using participatory approach.
Submit revised policies and laws to Attorney General Chambers for approval.
Submit revised policies and laws for Cabinet approval.

Output 5. Streamlined Institutions Structures and Mandates by December, 2010.

Institutions structures revised based on approval of revised policies and laws.
Institutions mandates revised based on revised policies and laws.

Table 14. Log Frame for Programme Area 1 - Policy, Legal and Administrative framework.

SUMMARIES	VERIFIABLE INDICATORS	MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS
Goal: To consolidate the policy, legal and regulatory, and administrative frameworks in Guyana that will support the sustainable use, protection and management of the country's biological diversity.	1. *Policies and Laws are harmonized across the Natural Resources and Environment sector, with the participation of stakeholders.* 2. *The Administrative Framework for Natural Resources and Environment streamlined to meet the requirements of the harmonized Policy and Legal Framework.*	1. *Revised Policies and Laws.* 2. *Reduction in the number of jurisdictional conflicts reported by 80%.* 3. *Survey on the level of understanding by Stakeholders of jurisdictional responsibilities and boundaries within the Legal and Regulatory Framework.* 1. *Structures and mandates of institutions streamlined to respond to the new harmonized Policy and Legal Framework.* 2. *Institutions provided with adequate human and financial resources to meet the requirements of the new harmonized Policy and Legal Framework.*	1. *Sustained political will to achieve effective management of the country's biodiversity.* 2. *Political will translates into adequate resources allocation to relevant institutions.* 3. *Financial resources are secured to implement activities.*
Objective(s): To review, consolidate and harmonize, and revise the current policy, legal and administrative frameworks for biodiversity management in Guyana, by 2011.	1. *Assessment Report on Policies Laws and the Institutional Framework for biodiversity management in Guyana with recommendations for changes that will inform consolidation and harmonization, endorsed by key stakeholders and approved by Government.* 2. *Assessment report on the structures required by institutions based on new harmonized policies and laws, endorsed by key stakeholders and approved by Government.*	*Approved Assessment Report.* *Approved Assessment Report.*	1. *Sustained political will to achieve effective management of the country's biodiversity.* 2. *Political will translates into adequate resources allocation to relevant institutions.* 3. *Financial resources are secured to implement activities.*

SUMMARIES	VERIFIABLE INDICATORS	MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS
	3. *Government Approval to proceed with revision of policies and laws and resultant required structures.* 4. *Revised policies and Laws using a participatory approach.* 5. *Institutions structures and mandates streamlined based on approved assessment.*	*Government Approval.* *Policies and Laws passed by Cabinet and implemented.* *Revised structures and mandates.*	
Outputs: 1. Assessment of Policy, Legal and Administrative Frameworks for biodiversity management by June, 2008. 2. Assessment of structures required by institutions for the new harmonized Policy and Legal Framework by August, 2008. 3. Government Approval of Assessment Findings by December, 2008. 4. Revised Policies and Laws by June, 2010. 5. Streamlined Institutional Structures and Mandates by December, 2010.	*Assessment Report produced.* *Assessment Report produced.* *Assessment Reports reviewed by NREAC and submitted to Cabinet for consideration* *Compendium of revised, and new policies, and laws produced, presented to NREAC for review and submitted to Cabinet for consideration.* *Amendments to existing laws, and new laws passed in Parliament.* *Mandate, role and function of institutions re-defined and reflected in Annual Work Plans.*	*Copies of report circulated* *Report reviewed by key stakeholders and feedback circulated.* *Copies of report circulated.* *Report reviewed by key stakeholders and feedback circulated.* *Minutes of NREAC Meeting.* *Copy of Cabinet decision on approval.* *Minutes of NREAC Meeting.* *Copy of Cabinet decision on approval.* *Copy of Amendments and new Bills.* *Copies of key sector institutions mandates, role and function available.* *Annual Work Plans available and reflect activities in relation to new mandate.*	*Full participation by sector agencies.* *Sector agencies and stakeholders accept findings and recommendations.* *Full participation by sector agencies.* *Sector agencies and stakeholders accept findings and recommendations.* *Political will is there to make key changes and adjustments.* *Political will is there to make key changes and adjustments.*

SUMMARIES	VERIFIABLE INDICATORS	MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS
Activities:			
1. <u>Assessment of Policy, Legal and Administrative Frameworks for biodiversity management by June, 2008.</u>			*Financial Resources are secured to implement activities.* *Political will is there to make key changes and adjustments.*
a. Develop Terms of Reference for Legal/Policy Expert to conduct assessment.	*Terms of Reference prepared.*	*Approved Terms of Reference.*	
b. Recruit Legal/Policy Expert.	*Legal/Policy expert hired.*	*Signed contract with the Legal/Policy Expert.*	
c. Legal/Policy expert to review report done by the National Capacity Self Assessment (NCSA) Project, which reviewed the current frameworks.	*Review taken into account in the Assessment report.*	*Assessment report captures the NCSA report assessment.*	
d. Conduct assessment using participatory approach.	*Assessment conducted.*	*Approved assessment report.*	
2. <u>Assessment of structures required by institutions for the new harmonized Policy and Legal Frameworks by August, 2008.</u>			
a. Develop Terms of Reference for Institutional Expert to conduct the assessment.	*Terms of reference developed.*	*Approved Terms of Reference.*	
b. Recruit Institutional Expert.	*Institutional Expert hired.*	*Signed contract with Institutional Expert.*	
c. Conduct assessment using participatory approach.	*Assessment conducted.*	*Approved assessment report.*	
3. <u>Government Approval of Assessment Findings by December, 2008.</u>			
a. Submit assessments (1 and 2) for Cabinet approval.		*Record of submission to Cabinet*	

SUMMARIES	VERIFIABLE INDICATORS	MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS
		(letter/memo).	
4. <u>Revised Policies and Laws by June, 2010.</u>	*Reports submitted to Cabinet.*		
a. Develop Terms of Reference for legal expert(s).		*Approved Terms of Reference.*	
b. Recruit Legal Expert(s).	*Terms of reference developed.*	*Signed contract with legal expert(s).*	
c. Revise Policies and Laws using participatory approach.	*Legal Expert(s) hired.*	*Draft revised policies and laws sanctioned by stakeholders.*	
d. Submit revised policies and laws to Attorney General Chambers for approval.	*Draft revised policies and laws.*	*Record of submission to AG Chambers (letter/memo).*	
e. Submit revised policies and laws for Cabinet approval.	*Revised policies and laws submitted to AG Chambers.*	*Record of submission to Cabinet (letter/memo).*	
5. <u>Streamlined Institutional Structures and Mandates by December, 2010.</u>	*Revised policies and laws submitted to Cabinet for approval.*		
a. Institutional structures revised based on approval of revised policies and laws.		*Record of changes in Institutional structures.*	
b. Institutional mandates revised based on revised policies and laws.	*Changes in Institutional structures implemented.*	*Record of changes in Institutional mandates.*	
	Changes in Institutional mandates implemented.		

6.2 PROGRAMME AREA 2 - INSTITUTIONAL STRENGTHENING/HUMAN RESOURCES CAPACITY BUILDING (CROSS-CUTTING ISSUE)

Project Title

Fostering effective and sustainable management of the Guyana's biological diversity through optimum human resources deployment and management.

Project Justification

Apart from financial resources, this is perhaps the second most critical challenge to biodiversity management in Guyana. At the level of the public, private and NGO sectors, the acute shortage of expertise, and along with weak institutional capacity, poses a serious obstacle to the achievement of the national goals related to management of biodiversity. This project will address these weaknesses by developing and retaining human resources and institutional capacity.

Project Summary

Guyana's human resource capacity for natural resources management is continuously being eroded while there is not an optimum use of existing capacity. This project seeks to assess the existing capacity in institutions in accordance with the harmonized Policy, Legislative and Institutional Framework for CBD, and to develop a Strategic Plan aimed at strengthening and building on existing capacity through skills development, recruitment, use and retention of existing skills. In an effort to sustain human resource capacity over time, the project will establish on-going capacity building activities and develop a financing mechanism to fund these, and also assess, identify and secure appropriate equipment and technology to assist human resource capacity in biodiversity management.

Project Duration

Three Years (2008-2010)

Executing Agency

Environmental Protection Agency

Collaborative Institutions

Natural Resources and Environment Advisory Committee
Guyana Forestry Commission
Guyana Geology and Mines Commission
Guyana Lands and Surveys Commission
Guyana Energy Agency

Outputs

1. Assessment of Skills by June, 2008.
2. Strategic Human Resources Plan for recruitment, use and retention of skills by December, 2008.
3. Capacity building exercises within and amongst institutions beginning by June, 2009.
4. Assessment, procurement and use of relevant equipment and technologies beginning by January, 2010.

Activities

Output 1.Assessment of Skills by June, 2008.

a. Develop Terms of Reference for Human Resources Consultant.
b. Recruit Human Resources Consultant.

c. Review structures proposed for the new harmonized Policy and Legal Framework for skills required.
d. Conduct assessment of skills available within Institutions.
e. Prepare report on skills gaps and requirements, and opportunities for linkages and sharing of skills amongst institutions.

Output 2. Strategic Human Resources Plan for recruitment, use and retention of skills by December, 2008.

a. Develop Terms of References for HR/Strategic Plan Consultant.
b. Recruit HR/Strategic Plan Consultant.
c. Prepare Strategic Plan.

Output 3. Regular capacity building exercises within and amongst institutions beginning by June, 2009.

a. Establish a list of capacity building activities based on established national priorities and skills assessment, and agreed on by stakeholder institutions.
b. Prepare an Annual/Quarterly roster of capacity building activities, approved by stakeholder institutions.
c. Implement planned capacity building activities as per roster within and amongst institutions.

Output 4. Assessment, procurement and use of relevant equipment and technologies beginning by January, 2010.

a. Conduct assessment of equipment and technology requirement for effective biodiversity management.
b. Develop financing strategy, if financing is not available, and proactively lobby funding from donors.
c. Procure equipment and technologies.
d. Train personnel in the use of equipment and technologies, within and amongst institutions.
e. Utilize, regularly and efficiently, equipment and technologies for biodiversity management.

Table 15. Log Frame for Programme Area 2 - Institutional Strengthening/Human Resources Capacity Building.

SUMMARIES	VERIFIABLE INDICATORS	MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS
Goal: Fostering effective and sustainable management of the Guyana's biological diversity through optimum human resources deployment and management.	1. *Strong institutions built around strategic planning in human resources employment and use of relevant technologies.*	1. *Response time to queries from the public shortened substantially.* 2. *Improved quality of data and information provided from institutions in a timely manner.* 3. *Institutions share information and skills on a regular basis (number of correspondence or emails sharing biodiversity-related information).*	1. *Sustained political will to achieve effective management of biodiversity.* 2. *Political will translates into adequate resources allocation to relevant institutions.* 3. *Institutional capacity building activities are sustainably financed.*
Objective(s): To assess, plan for and strengthen the human and equipment capacity of institutions to effectively manage Guyana's biodiversity by 2011.	1. *Skills Assessment conducted* 2. *Strategic human resources plan for recruitment, use and retention of skills within and amongst institutions prepared.* 3. *Regular capacity building activities within and amongst institutions conducted.* 4. *Assessment, procurement and use of relevant equipment and technologies required for effective biodiversity management.*	1. *Skills Assessment Report.* 2. *Approved Strategic Human Resources Plan.* 3. *Reports on capacity building activities carried out within institutions and shared amongst institutions.* 4. *Equipment needs assessment and procurement documentation and record of use of equipment to inform decision making.*	1. *Institutional capacity building activities are sustainably financed.*
Activities: 1. <u>Assessment of Skills by June, 2008.</u> a. Terms of Reference for Human			

SUMMARIES	VERIFIABLE INDICATORS	MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS
Resources Consultant	*Terms of Reference developed.*	*Approved Terms of Reference*	*Institutional capacity building activities are sustainably financed.*
b. Recruit Human Resources Consultant	*Consultant hired.*	*Contract with Consultant.*	
c. Review structures proposed for the new harmonized Legal and Policy Framework for skills required.	*Review conducted.*	*Review report.*	
d. Conduct assessment of skills available within Institutions.	*Assessment conducted.*	*Assessment report.*	
e. Prepare report on Skills gaps and requirements, and opportunities for linkages and sharing of skills amongst institutions.	*Report prepared.*	*Skills assessment report.*	
2. <u>Strategic Human Resources Plan for recruitment, use and retention of skills by December, 2008.</u>			
a. Develop Terms of References for HR/Strategic Plan Consultant.			
b. Recruit HR/Strategic Plan Consultant.	*Terms of Reference.*	*Approved Terms of Reference.*	
c. Prepare Strategic Plan.	*Consultant hired.*	*Contract with Consultant.*	
3. <u>Capacity building exercises within and amongst institutions beginning by June, 2009.</u>	*Strategic Plan.*	*Approved Strategic Plan.*	
a. Establish a list of capacity building activities based on established national priorities and skills assessment, and agreed on by stakeholder institutions.	*List of capacity building activities agreed on by stakeholder institutions.*	*List approved by Government.*	
b. Prepare an Annual/Quarterly roster of capacity building activities, approved by stakeholder			

SUMMARIES	VERIFIABLE INDICATORS	MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS
institutions. c. Implement planned capacity building activities as per roster within and amongst institutions. 4. <u>Assessment, procurement and use of relevant equipment and technologies beginning by January, 2010.</u> a. Conduct assessment of equipment and technology requirement for effective biodiversity management. b. Develop financing strategy, if financing is not available, and proactively lobby funding from donors. c. Procure equipment and technologies. d. Train personnel in the use of equipment and technologies, within and amongst institutions. e. Utilize regularly and efficiently equipment and technologies for biodiversity management.	*Annual or Quarterly roster agreed on by stakeholder institutions.* *Implementation of capacity building activities.* *Assessment conducted.* *Financing Strategy developed.* *Equipment and technologies procured.* *Personnel trained in the use of equipment and technologies.* *Equipment and technologies utilized regularly and efficiently to inform decisions.*	*Roster of capacity building activities approved by Government.* *Records of Capacity building exercises. Improvement in quality of work produced by staff resulting from training.* *Assessment report.* *Financing strategy approved.* *Record of procurement.* *Record of trainings conducted.* *Record of equipment and technology usage to inform decision-making.*	

6.3 PROGRAMME AREA 3 - MAINSTREAMING BIODIVERSITY (CROSS-CUTTING ISSUE)

Project Title

Integrating biodiversity issues and activities into strategic and operational planning of key responsible agencies.

Project Justification

During NBAP I, biodiversity issues were not fully integrated into the plans of responsible agencies which resulted in the burden of responsibility for undertaking biodiversity-related projects falling on the EPA. This project is designed to increase the ownership of biodiversity conservation and sustainable utilisation by responsible agencies and makes full recognition of their roles and responsibilities in this area.

Project Summary

The objective of this project is to ensure that biodiversity issues and activities are integrated into the strategic and operational planning of key responsible agencies. Agencies will be identified and their planning cycles described. A list of key biodiversity issues and activities will be developed based on the work programmes of the CBD and especially on the priority areas identified by this NBAP II. Activities will be linked to appropriate lead agencies who will then be encouraged to integrate them into their respective planning cycles and ultimately their strategic and operational plans. The project will also develop a set of practical guidelines for on-going monitoring of the success of mainstreaming efforts within responsible agencies.

Project Duration

One Year (2007-2008)

Executing Agency

Environmental Protection Agency

Collaborative Institutions

Guyana Forestry Commission
Environmental Protection Agency
Guyana Geology and Mines Commission
Guyana Lands and Surveys Commission
National Agriculture and Research Institute
Ministry of Agriculture

Outputs

1. List of responsible agencies by December, 2007.
2. Review of agencies' planning cycles by March, 2008.
3. List of key biodiversity issues allocated to agencies by June, 2008.
4. Report on collaborative approaches to integrate biodiversity issues by September, 2008.
5. Written guidelines for monitoring integration of biodiversity issues into agencies' plans by December, 2008.

Activities

Output 1. List of responsible agencies by December, 2007.

a. Identify key responsible agencies

Output 2 .Review of agencies' planning cycles by March, 2008.

a. Review the planning cycles of key agencies:
   - Hold interviews with management of agencies; and
   - Compile report on planning cycles.

Output 3. List of key biodiversity issues allocated to agencies by June, 2008.

a. Identify key biodiversity issues and compile list of appropriate activities:
   - Review NBAP II situational analyses and CBD programmes of work; and
   - Prioritise issues and activities and link to appropriate agencies.

Output 4. Report on collaborative approaches to integrate biodiversity issues by September, 2008.

a. Liaise with organisations to integrate biodiversity issues and activities into their strategic and operational plans:
   - Arrange appropriate mechanisms with agencies; and
   - Conduct meetings and interventions as appropriate.

Output 5. Written guidelines for monitoring integration of biodiversity issues into Agencies' plans by December, 2008.

a. Develop guidelines for monitoring success of integration:
   - Review level of integration; and
   - Develop guidelines.

Table 16. Log Frame for Programme Area 3 - Mainstreaming Biodiversity.

SUMMARIES	VERIFIABLE INDICATORS	MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS
Goal: To improve the mainstreaming of biodiversity issues and activities required by the CBD into the planning and operations of government ministries, public institutions, regulatory agencies, NGOs and private organisations in Guyana.	1. *Awareness of Guyana's obligations to the CBD improves within organisations.* 2. *Guyana continues to improve its ability to meet obligations of the CBD.*	1. *Representation of organisations at biodiversity-related meetings.* 2. *Senior management of organisations more aware of CBD and appropriate activities within work programmes.* 3. *National reports to the COP.*	1. *Government of Guyana continues its commitment to the CBD.* 2. *Senior management is receptive to requirements of CBD.* 3. *Political will translates into adequate resources allocation to relevant institutions.*
Objective: To ensure that biodiversity issues and activities are integrated into the strategic and operational planning of key responsible agencies.	*Biodiversity issues and activities are part of organisations' strategic and operational plans from 2009.*	*Strategic and operational plans.*	*Senior management of responsible agencies are receptive to integrating biodiversity issues into planning process*
Outputs: 1. List of responsible agencies by December, 2007. 2. Review of agencies' planning cycles by March, 2008. 3. List of key biodiversity issues allocated to agencies by June, 2008. 4. Report on collaborative approaches to integrate biodiversity issues by September, 2008.	*Key responsible agencies identified.* *Planning cycles reviewed and described for key agencies.* *Key biodiversity issues and appropriate activities identified and allocated to appropriate agency.* *Collaborative approaches to integrate biodiversity issues into strategic and operational plans developed.*	*List of responsible agencies.* *Report on planning cycles of key agencies.* *Matrices of prioritised biodiversity issues and activities indicating appropriate lead agency.* *Notes from meetings with key agencies and report on collaborative approaches.*	*Funding for project activities is available in a timely manner.* *Management and staff of key agencies are cooperative and provide appropriate information.*

SUMMARIES	VERIFIABLE INDICATORS	MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS
5. Written guidelines for monitoring integration of biodiversity issues into agencies' plans by December 2008.	*Guidelines for monitoring developed.*	*Written monitoring guidelines.*	
Activities:			
1. Identify key responsible agencies by December, 2007.	*Key responsible agencies identified.*	*List of responsible agencies.*	*Sufficient funding is available.* *Key agencies are willing to engage.*
2. Review the planning cycles of key agencies by March, 2008.			
a. Hold interviews with management of agencies.	*Key agencies interviewed.*	*Notes on meetings.*	
b. Compile report on planning cycles.	*Review of planning cycles conducted.*	*Report on planning cycles of key agencies.*	
3. Identify key biodiversity issues and compile list of appropriate activities by June, 2008			
a. Review NBAP II situational analyses and CBD programmes of work.	*NBAP II and CBD programmes of work reviewed.*	*Notes from meetings with key agencies and report on collaborative approaches.*	
b. Prioritise issues and activities and link to appropriate agencies.	*Issues prioritised and linked to agencies.*		
4. Liaise with organisations to integrate biodiversity issues and activities into their strategic and operational plans by September, 2008.			
a. Arrange appropriate mechanisms with agencies.	*Mechanisms arranged.*	*Notes from meetings*	
b. Conduct meetings and interventions as appropriate.	*Meetings held and interventions occurred as appropriate.*		

SUMMARIES	VERIFIABLE INDICATORS	MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS
5. <u>Develop guidelines for monitoring success of integration by December, 2008.</u> a. Review level of integration. b. Develop guidelines.	*Level of integrations reviewed.* *Guidelines for monitoring developed.*	*Written monitoring guidelines.*	

6.4 PROGRAMME AREA 4 - INTEGRATED LAND-USE PLANNING (CROSS-CUTTING ISSUE)

Project Title

Development of planning and operational guidelines for synergistic utilisation of natural resources in the State Forests of Guyana.

Project Justification

The utilisation of resources in state forests is often sub-optimal because operators in the various sectors who may have overlapping rights to the resource tend to operate independently. The lack of overarching and coordinated land-use planning can lead to conflicts among operators with detrimental effects to local and national economies and the social and natural environment.

Project Summary

This project will focus on developing planning and operational guidelines for commercial users of natural resources within the State Forests of Guyana. It will emphasise the synergistic potential of multiple use in contrast to the current sector-specific and rather antagonistic approach. A pilot area will be identified that covers current logging, mining and wildlife exploitation activities. The present extent of legal activities will be identified and mapped along with a review of pertaining sector- and organisation-specific planning procedures. A set of best-practice guidelines will be developed in collaboration with responsible agencies and resource users that will seek to maximise benefits and reduce conflicts. The guidelines will then be actively promoted within the pilot area and a set of criteria and indicators developed and tested to measure the extent of successful implementation.

Project Duration

Two Years (2007-2009)

Lead Agency

Guyana Forestry Commission

Collaborative Institutions

Guyana Geology and Mines Commission
Guyana Lands and Surveys Commission
Wildlife Division
Environmental Protection Agency
Ministry of Agriculture

Outputs

1. Identified Pilot Area produced by December, 2007.
2. Description of land-use and GIS maps of Pilot Area December, 2007.
3. Report on planning procedures by June, 2008.
4. Written guidelines on best practice by December, 2008.
5. Model land-use plan by June, 2009.
6. List of criteria and indicators by December, 2009.

Activities

Output 1. Pilot Area identified by December, 2007.

a. Identify pilot planning area:
   - Research suitable sites;
   - Liaise with relevant agencies; and
   - Delineate pilot area.

Output 2. Description of land-use and GIS maps of Pilot Area by December, 2007.

a. Describe mining, logging and hunting/trapping activities in the pilot area:
   - Collect information from responsible agencies;
   - Interview local communities; and
   - Map forestry and mining concessions indicating legal claims, past activity and current operations:
     - Collate digital maps from responsible agencies; and
     - Review available information on past activities.

Output 3. Report on planning procedures by June, 2008.

a. Review the pertaining planning procedures for resource-use in the pilot area:
   - Review procedures required by responsible agencies; and
   - Review local and regional administrative planning requirements.

Output 4. Written guidelines on best practice by December, 2008.

a. Develop best practice guidelines for integrated resource use that maximise synergies among resource users:
   - Review successful integrated land-use planning examples from Guyana and elsewhere;
   - Liaise with stakeholders; and
   - Develop protocols.

Output 5. Model land-use plan by June, 2009.

a. Promote implementation of guidelines in the pilot area:
   - Hold stakeholder workshops to present protocols; and
   - Publish protocols and undertake promotional campaign.

Output 6. List of criteria and indicators by December, 2009.

a. Develop criteria and indicators for successful implementation:
   - Review criteria and indicators in use globally; and
   - Develop criteria and indicators.

Table 17. Log Frame for Programme Area 4 - Integrated Land-Use Planning.

SUMMARIES	VERIFIABLE INDICATORS	MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS
Goal: To improve land-use planning in Guyana by utilising modern technology and integrated approaches that seek to optimise benefits to all users while ensuring biodiversity conservation and sustainability	1. *Integrated land-use approaches are available and in use.* 2. *Agencies responsible for land-use planning are adopting a collaborative approach with other agencies and users.* 3. *Sustainability of resources and biodiversity are not negatively affected.*	. 1. *Protocols for planning.* 2. *Inter-agency land-use planning committee.* 3. *Indicators of sustainability and biodiversity conservation.*	1. *Government of Guyana continues its commitment to CBD and land-use planning.* 2. *Senior management of planning agencies is receptive to collaborative approaches and requirements of CBD.* 3. *Political will translates into adequate resources allocation to relevant institutions.*
Objective: To develop planning and operational guidelines, and a model integrated land-use plan, for commercial users of natural resources within a pilot area of State Forest in Guyana to maximise synergistic potential of multiple use.	1. *Integrated model land-use plan for pilot area by 2009.* 2. *Integrated land-use planning guidelines developed and utilised by commercial natural resource users by 2009.*	1. *Integrated land-use plan.* 2. *Operational and strategic plans of commercial users.* 3. *Land-use planning guidelines.*	1. *Senior management of agencies and commercial users of natural resources are receptive to integrated planning.*
Outputs 1. Identified Pilot Area produced by December, 2007. 2. Description of land-use and GIS maps of Pilot Area by December, 2007. 3. Report on planning procedures by June, 2008.	*Pilot area identified and description of land- and natural resource-users in pilot area and GIS maps.* *Report produced.* *Planning procedures reviewed.*	*Pilot area definition.* *Report describing land use and GIS maps.* *Planning procedures report.* *Guidelines for best practice.*	*Funding for project activities is available in a timely manner.* *Resources for development of land-use plan are readily available.* *Management and staff of key agencies and commercial users are cooperative and collaborate in development of guidelines*

SUMMARIES	VERIFIABLE INDICATORS	MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS
4. Written guidelines on best practice by December, 2008. 5. Model land-use plan by June, 2009. 6. List of criteria and indicators by December, 2009.	*Guidelines for best practice guidelines developed.* *Model land-use plan developed.* *Criteria and indicators produced*	*Model land-use plan.* *Criteria and indicators matrix.*	*and model plan.*
Activities: 1. Identify pilot planning area by December, 2007. a. Research suitable sites. b. Liaise with relevant agencies. c. Delineate pilot area. 2. Describe mining, logging and hunting/trapping activities in the pilot area by December, 2007. a. Collect information from responsible agencies. b. Interview local communities. 3. Map forestry and mining concessions indicating legal claims, past activity and current operations by June, 2008. a. Collate digital maps from responsible agencies. b. Review available information on past activities. 4. Review the pertaining planning procedures for resource-use in the pilot area by December, 2008.	*Sites researched.* *Pilot area identified.* *GIS maps produced.* *Collected from responsible agencies.* *Local communities interviewed.* *Digital maps collected* *Review of information on past land-use.*	*Pilot area definition.* *Description of land use and GIS maps.* *Notes, Reports and compilation of information.* *Notes, Records of interviews.* *Digital maps available.* *Report of Review.*	*Communities, responsible agencies and private organisations work together in a synergistic manner.* *Ready access to maps and information.*

SUMMARIES	VERIFIABLE INDICATORS	MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS
a. Review procedures required by responsible agencies. b. Review local and regional administrative planning requirements.	*Review of planning procedures.*	*Planning procedures report.*	
5. <u>Develop best practice guidelines for integrated resource use that maximise synergies among resource users by June, 2009.</u>	*Review conducted.*	*Report.*	
a. Review successful integrated land-use planning examples from Guyana and elsewhere. b. Liaise with stakeholders. c. Develop protocols.			
6. <u>Promote implementation of guidelines in the pilot area by December, 2009.</u>	*Review of success stories.*	*Guidelines for best practice available.*	
a. Hold stakeholder workshops to present protocols b. Publish protocols and undertake promotional campaign	*Protocols developed.*	*Model land-use plan.*	
	Workshop held.	*Criteria and indicators matrix.*	
		Workshop report and attendance sheet.	
	Protocols published	*Copies of Publications.*	

6.5 PROGRAMME AREA 5 - AWARENESS AND EDUCATION (CROSS-CUTTING ISSUE)

Project Title

Developing an Integrated Information, Communication (IIC) System for Biodiversity Conservation and the execution of an Awareness Programme to support the sustainable use, protection and management of Guyana's biological diversity.

Project Justification

Education and awareness is a key aspect to achieving biodiversity conservation objectives. This was recognized within NBAP as a Phase I Programme Area and was highlighted as a critical issue as part of the NCSA project. While there have been initiatives towards raising awareness of biodiversity, as well as efforts through the formal education system, these have not been developed and implemented in a strategic way. This project seeks to establish and implement a framework for public conservation awareness across Guyana and to sensitise the population and build people's appreciation of the values, attributes, and conservation approaches to biodiversity resources.

Project Summary

The project will assess efforts towards biodiversity education and awareness and provide a vehicle for the effective dissemination of information on the status and conservation measures for biological diversity at all levels. This will be done through the development and implementation of a training programme on biodiversity awareness for key target stakeholder groups, the preparation and dissemination of relevant materials, and the establishment of a Biodiversity Conservation Awareness and Information Network System.

The project will complement formal programmes of education and allow stakeholders to be in a better position to contribute to conservation and sustainable use of biodiversity through a well focused and targeted conservation campaign (through workshops, seminars and stakeholder consultations and utilization of the network of environmental clubs and organizations with which the EPA currently interact in all Administrative Regions).

Project Duration

Three Years (2008-2010)

Executing Agency

Environmental Protection Agency

Collaborative Institutions

Stakeholder Agencies, Administrative Regional Bodies

Outputs

1. Situation Analysis of previous biodiversity education and awareness efforts by June, 2008.
2. Training Programme and Materials by December, 2008.
3. Execution of Training Programme by December, 2009.
4. Biodiversity Conservation Awareness and Information Network System developed by June, 2010.

Activities

1. Situation Analysis of previous biodiversity education and awareness efforts by June, 2008.

a. Develop Terms of Reference for Education and Awareness Consultant to conduct situational analysis and needs assessment.
b. Recruit Education and Awareness Consultant.
c. Consultant conducts situational analysis and needs assessment and makes recommendations.
d. Consultant prepares report and submits to EPA.

2. Training Programme and Materials by December, 2008.

a. Develop Terms of Reference for Education and Awareness Consultant to develop training programme.
b. Development of training programme.
c. Preparation of manuals, leaflets and other relevant materials on biological diversity issues specific to target groups.

3. Execution of Training Programme by December 2009.

a. Develop Terms of Reference for Training Coordinator.
b. Execute Training Programme.

4. Biodiversity Conservation Awareness and Information Network System developed by June, 2010.

a. Develop Terms of Reference for establishment of Biodiversity Conservation Awareness and Information Network System.
b. Establish IT Network System and prepare relevant materials for stakeholder target groups.

Table 18. Log Frame for Programme Area 5 - Awareness and Education.

SUMMARIES	VERIFIABLE INDICATORS	MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS
Goal: To develop an educated and sensitive population that is aware of the complexities of the necessity for integrating the human and physical environment for the long-term sustainable use of its biodiversity resources.	1. *Consultant terms of reference drafted and consultant identified and in place.* 2. *Multidisciplinary team identified and contracted.* 3. *Materials prepared and available for dissemination to target stakeholder groups.* 4. *Greater awareness and understanding of the value and role of Guyana's biological diversity.* 5. *A more enlightened population generally on issues pertaining to biodiversity management and conservation.* 6. *General public support for the sustainable use of Guyana's biological diversity.* 7. *A well designed education and awareness programme to educate various levels of the national population.* 8. *A set of well prepared materials – audiovisual and print – for dissemination and use by stakeholders in the use, conservation and management of Guyana's biological diversity resources.* 9.	1. *Education and awareness consultant in place.* 2. *Stakeholder workshops, seminars and consultations conducted.* 3. *Information and materials prepared and disseminated to stakeholder groups.* 4. *A public survey to ascertain the level of awareness of biodiversity issues.* *Programme document.* *Record of materials.*	1. *Sustained political will to achieve effective management of the Guyana's biodiversity.* 2. *Political will translates into adequate resources allocation to relevant institutions.* 3. *Financial resources are secured to implement activities.* 4. *Collaboration and cooperation with sector agencies and stakeholder groups will be forthcoming.*

SUMMARIES	VERIFIABLE INDICATORS	MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS
Objective(s): To enhance national awareness of the threats to Guyana's biodiversity. To foster national appreciation of biodiversity conservation efforts and the need for management of biological diversity. To plan and execute workshops for selected groups of stakeholders to highlight critical issues on biological diversity management and conservation. To develop and disseminate information on biological diversity issues to specific target groups.	*1. Reports on workshops, seminars and stakeholder consultations for biodiversity management in Guyana with recommendations for actions that will inform continued efforts endorsed by key stakeholders and approved by Government.* *2. Media campaign undertaken and there is preparation and distribution of materials through all forms of media as specified in project document.* *3. Education and awareness consultant report prepared and available with recommendations for implementing agencies and stakeholders.* *4. Stakeholder interest and awareness increased at the completion of the media campaign.*	*1. Education and awareness consultant Needs Assessment Report approved.* *2. Workshops and consultation reports with recommendations completed and endorsed by implementing agency and education and awareness consultant.* *3 On-going media promotion and distribution of flyers, posters, and other education and awareness materials using all forms of media.*	*1. Sustained political will to achieve effective management of the Guyana's biodiversity.* *2. Political will translates into adequate resources allocation to relevant institutions.* 3. *Financial resources are secured to implement activities.* *4. Collaboration and cooperation with sector agencies and stakeholder groups will be forthcoming.*
Outputs: 1. Situation Analysis of previous biodiversity education and awareness efforts by June, 2008. 2. Training Programme and Materials by December, 2008. 3. Execution of Training Programme by December, 2009.	*Situation Analysis Report produced* *Training Programme document and Materials produced.* *Schedule of Training activities developed and arrangements made.*	*Copies of report circulated.* *Report reviewed by stakeholders and feedback provided.* *Copies of Training Programme document, leaflets and other materials circulated.* *Stakeholders provide feedback.* *Reports from Training activities.* *Number of participants at training.*	*Full participation by sector agencies and stakeholders.* *Adequate financial resources are allocated.* *Full participation by stakeholders.* *Adequate financial resources are available.* *Financial and technical resources*

SUMMARIES	VERIFIABLE INDICATORS	MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS
4. Biodiversity Conservation Awareness and Information Network System developed by June, 2010.	*Network established and functioning.*	*Hardware and software components in place.* *Personnel trained and functioning.* *Materials produced and circulated.* *Network available to stakeholders.*	*available.*
Activities:			
1. <u>Situation Analysis of previous biodiversity education and awareness efforts by June, 2008.</u>			*Sustained political will to achieve effective management of Guyana's biodiversity.*
a. Develop Terms of Reference for Education and Awareness Consultant to conduct situation analysis and needs assessment.	*Terms of Reference prepared.*	*Approved Terms of Reference.*	*Financial resources are secured to implement activities.*
b. Recruit Education and Awareness Consultant.	*Education and awareness consultant hired.*	*Signed contract with education and awareness consultant.*	*Collaboration and cooperation among sector agencies and stakeholder groups will be forthcoming.*
c. Consultant undertakes Situation Analysis and Needs Assessment.	*Situation Analysis and Needs Assessment conducted.*	*Record of stakeholder engagements and discussions.*	
d. Consultant prepares report and submits to EPA.	*Reports completed and presented to the EPA.*	*Reports available.* *Record of EPA approval and endorsement.*	
2. <u>Training Programme and Materials by 2008</u>			
a. Develop Terms of Reference for Education and Awareness Consultant to develop training programme and recruit consultant.	*Terms of Reference prepared.* *Consultants hired.*	*Copy of Terms of Reference available.* *Signed contract available.*	
b. Development of Training Programme.	*Training Programme prepared and submitted to EPA for approval.*	*Copy of Training Programme available..* *Record of EPA approval and endorsement.*	
c. Preparation of manuals, leaflets and other relevant materials for specific target groups.		*Materials circulated.*	

SUMMARIES	VERIFIABLE INDICATORS	MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS
	Materials produced.		
3. Execution of Training Programme by December, 2009.			
a. Develop Terms of Reference for Training Coordinator and recruit Coordinator.		*Approved Terms of Reference available.* *Signed contract with Coordinator.*	
b. Execution of Training Programme.	*Terms of Reference prepared.* *Coordinator hired.*	*Record of attendance at workshops.* *Workshop reports available and endorsed by EPA.*	
4. Biodiversity Conservation Awareness and Information Network System developed by June, 2010.	*Training workshops conducted.* *Workshop reports prepared.*		
a. Develop Terms of Reference for establishment of Biodiversity Conservation Awareness and Information Network System.		*Approved Terms of Reference available.*	
b. Establish IT Network System and prepare relevant materials for stakeholder target groups.	*Terms of Reference prepared.*	*IT System and network functional and available to stakeholder.* *Materials available and circulated.* *Record of feedback from stakeholders on IT System and materials.*	
	IT System in place. *Materials prepared.*		

6.6 PROGRAMME AREA 6 – RESEARCH AND DATA COLLECTION, INFORMATION SHARING AND MANAGEMENT (CROSS-CUTTING ISSUE)

Project Title

Strengthening the framework for biodiversity research, data collection, information sharing and management in Guyana.

Project Justification

Research is necessary in order to upgrade the knowledge base of Guyana's biodiversity and its components. A number of agencies and institutions are involved in biodiversity research in Guyana. Although the EPA has been identified in NBAP to be the clearing house for biodiversity research and the custodian of information, the system to ensure this requires has to be implanted and consolidated. The assimilation of research results and the access and dissemination of information warrant the existence of a proper functioning unit with established rules and procedures. This project seeks to ensure that unit and system are in place.

Project Summary

The project seeks to build on the existing framework for biodiversity research and data collection, information sharing and management. It is recognised that a number of initiatives are in place such as the identification of research priorities for biodiversity information; initiatives towards setting up a biodiversity network regionally and locally through a National Biodiversity Research Information System. The project will seek to build on these as well as strengthen and expand the framework and promoting better institutional collaboration.

Project Duration

Two Years (2008-2009)

Executing Agency

Environmental Protection Agency

Collaborative Institutions

All local and international organisations involved in biodiversity research in Guyana
Sector Agencies (GFC, GGMC, GEA, GLSC, EPA)
Private Sector and NGOs

Outputs

1. Situation Analysis on the extent of data collection and research on biodiversity by June, 2008.
2. Examination of current arrangements for institutional collaboration and cooperation for biodiversity information collection, sharing and management by December, 2008.
3. Initiatives to strengthen the current system for biodiversity information sharing and management beginning by January, 2009.

Activities

1. Situation Analysis on the extent of data collection and research on biodiversity by June, 2008

a. Identify existing information and sources.
b. Assess existing information in terms of biodiversity research and data priorities.
c. Identify gaps and opportunities for future work as well as challenges to biodiversity data collection and research.

2. *Examine current arrangements for institutional collaboration and cooperation for biodiversity information collection, sharing and management by December, 2008.*

    a. Assess current arrangements for data management and sharing.
    b. Assess the implementation of the National Biodiversity Research Information System.

3. *Initiatives to strengthen the current system for biodiversity information sharing and management by January, 2009.*

    a. Seek to establish the National Biodiversity Research Information System as the entity for collecting, collating and dissemination information on biodiversity.
    b. Develop protocols for information sharing and access.
    c. Secure support and cooperation of sector institutions and agencies.
    d. Assign a Biodiversity Information Coordinator within EPA.

Table 19. Log Frame for Programme Area 6 – Research and Data Collection, Information Sharing and Management.

SUMMARIES	VERIFIABLE INDICATORS	MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS
Goal: To strengthening the framework for biodiversity research, data collection, information sharing and management in Guyana.	1. *Improved collaboration among institutions for research, data collection, sharing and management.*	1. *Increase in extent of biodiversity research.* 2. *Institutions provide information to and benefit from the Biodiversity Information Service.* *NREAC approval of Monitoring and Evaluation Mechanism.*	1. *Political will translates into adequate resources allocation to relevant institutions.* 2. *Financial resources are secured to implement activities.* 3. *Collaboration and cooperation with sector agencies and stakeholder groups will be forthcoming.*
Objectives: To undertake an assessment of the existing situation as it regards biodiversity information and to streamline the present framework for better information management.	1. *Stakeholders willing to participate and provide information for assessment exercise.* 2. *Stakeholder supports efforts to streamline biodiversity information framework.*	1. *Report from assessment exercise.* 2. *Stakeholders signing on to data sharing arrangements and providing and accessing data readily.* 3. *Within institutions, high priority given to biodiversity data management.*	1. *Political will translates into adequate resources allocation to relevant institutions.* 2. *Financial resources are secured to implement activities.* 3. *Collaboration and cooperation with sector agencies and stakeholder groups will be forthcoming.*
Outputs: 1. Situation Analysis on the extent of data collection and research on biodiversity by June, 2008. 2. Examination of current arrangements for institutional collaboration and cooperation for biodiversity information collection, sharing and management by December, 2008.	*Situation Analysis report produced.* *Report produced.*	*Copies of report circulated.* *Report reviewed by key stakeholders and feedback provided.* *Copies of report circulated.* *Report reviewed by key stakeholders and feedback provided.*	*Adequate financial resources available.* *Key agencies and institutions willing to provide and share information.* *Key agencies and institutions willing to provide and share information.* *Adequate financial resources are available.*

SUMMARIES	VERIFIABLE INDICATORS	MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS
3. Initiatives to strengthen the current system for biodiversity information sharing and management beginning by January, 2009.	*Position Paper on Initiatives produced and presented to NREAC for review.* *EPA assigns Biodiversity Information Coordinator to implement and operate initiatives.*	*Minutes of NREAC Meeting.* *Record of formal decision by EPA Board.* *Terms of Reference for Coordinator available.* *Record of recruitment.*	
Activities:			
1. <u>Situation Analysis on the extent of data collection and research on biodiversity by June, 2008.</u>			*Political will translates into adequate resources allocation to relevant institutions.*
a) Identify existing information and sources.	*Institutions, Agencies and individuals willing to engage and discuss biodiversity information and provide details on information.*	*Records of engagements and list of biodiversity information and sources.*	*Financial resources are secured to implement activities.* *Collaboration and cooperation with sector agencies and stakeholder groups will be forthcoming.*
b) Assess existing information in terms of biodiversity research and data priorities.	*Cross reference done against report on biodiversity research priorities and present priorities as identified by key stakeholder bodies.*	*Assessment report.*	
c) Identify gaps and opportunities for future work as well as challenges to biodiversity data collection and research	*Stakeholder institutions engaged in discussion on challenges and opportunities to biodiversity data collection.*	*Record of stakeholder engagements.* *Assessment report.*	
2. <u>Examination of current arrangements for institutional collaboration and cooperation for biodiversity information collection, sharing and management by December, 2008.</u>			
a) Assess current arrangements for data			

SUMMARIES	VERIFIABLE INDICATORS	MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS
management and sharing.	*Stakeholder institutions provide details on their biodiversity data sharing and management arrangements.*	*Records of stakeholder engagements.* *Report from assessment.*	
b) Assess the implementation of the National Biodiversity Research Information System.	*Discussions with EPA on the implementation of the National Biodiversity Research Information System and feedback from stakeholders utlising the service.*	*Records of stakeholder engagements.* *Report from assessment.*	
3. <u>Initiatives to strengthen the current system for biodiversity information sharing and management beginning by January, 2009.</u>			
a) Seek to establish the National Biodiversity Research Information System as the entity for collecting, collating and dissemination information on biodiversity.	*EPA presents position paper to NREAC for decision.*	*Approval provided by NREAC.*	
b) Develop protocols for information sharing and access	*EPA develops draft protocol and engages stakeholders to review and finalise.*	*Draft Protocol.*	
c) Secure support and cooperation of sector institutions and agencies.	*Stakeholders willing to work with the Biodiversity Information Service in providing information and gaining access.* *Stakeholders willing to allocate resources within respective institutions to support the work of the National Biodiversity*	*MoUs established between EPA and stakeholder Agencies and organisations.* *Annual Budgets of stakeholder agencies and organisations reflect allocations to support biodiversity information.*	
d) Assign Biodiversity Information			

SUMMARIES	VERIFIABLE INDICATORS	MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS
Coordinator within EPA to operate and maintain Information System.	*Research Information System.* *EPA takes a decision to create the position of Biodiversity Information Coordinator and begins recruitment.*	*Record of EPA decision.* *Terms of Reference for Biodiversity Information Coordinator.*	

6.7 PROGRAMME AREA 7 - *IN SITU* AND *EX SITU* CONSERVATION OF BIODIVERSITY (CROSS-CUTTING ISSUE)

Project Title

Consolidating in situ and ex situ conservation of Guyana's biological diversity for effective use and management.

Project Justification

In situ and *ex situ* conservation action is critical to the achievement of UNCBD objectives. NBAP had established this as a key Programme Area in Phase I. The NCSA Stock Taking and Thematic Assessment for UNCBD also recognized this as a priority area for action. The scope of this project seeks to consolidate the various ongoing *in situ* and *ex situ* initiatives and build on existing initiatives and to explore other possible approaches to achieve the conservation objective through *in situ* and *ex situ* action.

Project Summary

The aim of this project is to enhance *in situ* and *ex situ* conservation efforts through effective streamlining of existing efforts. Various *in-situ* and *ex-situ* conservation programmes are currently being undertaken, even while new ones are being proposed and planned. Currently, there is a larger and on-going programme seeking to establish a Protected Areas System for Guyana (GPAS) which aims to establish and manage selected conservation areas in Guyana. The effectiveness of these programmes in conserving biodiversity needs to be evaluated in terms of the preservation, restoration and expansion of habitats, enhancement of the survival of target species, reduction or elimination of the threats to habitat destruction and species loss, among others.

Other potential management approaches (e.g., indigenous management practices, ecotourism, inter-habitat connectivity and other community-based approaches) in *in-situ* and *ex-situ* conservation need to be investigated and incorporated into biodiversity planning. By consolidating these activities, more focused and rigorous research and development programmes can be pursued.

Project Duration

Four Years (2008-2011)

Executing Agency

Environmental Protection Agency

Collaborative Institutions

National and International NGOs
University of Guyana
Botanical Gardens
Zoological Park
National Parks Commission
NARI
GuySuCo
GRDB.

Outputs

1. Coordinated and expanded *ex situ* conservation activities by December, 2008.
2. Consolidated research and development programmes for *in-situ* conservation of biodiversity by December, 2009.
3. Development and expansion of Guyana's Protected Areas System (GPAS) beginning by January, 2008.

Activities

1. Coordinated and expanded ex situ conservation activities by December, 2008.

a. Document all *ex situ* conservation activities currently being undertaken by different agencies in Guyana.
b. Develop a national network involving agencies engaged in *ex situ* conservation.
c. Create an electronic database of agencies and the *ex situ* activities they are engaged in.
d. Develop a national web-site that can be accessed by all participating agencies for the sharing and updating of information on *ex situ* conservation strategies.
e. Extend *ex situ* work being done at the zoological park and botanical gardens.
f. Conduct stakeholder workshop to sensitise stakeholders about national *ex situ* conservation initiatives.

2. Consolidating research and development programs for in-situ conservation of biodiversity by December, 2009.

a. Inventorise all *in situ* conservation and research activities.
b. Conduct Rapid Ecological Assessments of specific sites identified for inclusion in the GPAS.
c. Maintain a database of ecological information on all proposed GPAS sites.
d. Coordinate a biodiversity research and monitoring programme for all GPAS sites to provide updated information for management decision-making.

3. Development and expansion of Guyana's Protected Areas System (GPAS) beginning by January, 2008.

a. Maintain an up to date inventory of established Protected Areas.
b. Provide and maintain basic infrastructure and equipment for conservation activities within GPAS sites.
c. Determine and demarcate boundaries and borderlines of conservation zones and special activity areas within GPAS sites.
d. Develop management plans for GPAS sites.
e. Continue capacity building initiatives for the effective management of GPAS sites.
f. Develop livelihood activities to enhance the GPAS sites for environmental and socio-cultural sustainability.

Table 20. Log Frame for Programme Area 7 - *In Situ* and *Ex Situ* Conservation of Biodiversity.

SUMMARIES	VERIFIABLE INDICATORS	MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS
Goal: To enhance and integrate existing and planned biodiversity conservation efforts with emphasis on *in-situ* and *ex situ* activities and through continued development of a GPAS.	*1. Participating institutions identified.* *2. Production of status report on in situ and ex situ conservation initiatives.* *3. Formation of networks to promote in situ and ex situ initiatives.* *4. Programme for continued development of GPAS.*	*1. An increase in the number of established Protected Areas.* *2. Streamlined in situ and ex situ conservation initiatives.* *3. Improved conservation and management effectiveness of GPAS and ex situ conservation activities.*	*1. Sustained political will to achieve effective management of the Guyana's biodiversity.* *2. Political will translates into adequate resources allocation to relevant institutions.* *3. Financial resources are secured to implement activities.* *4. Collaboration and cooperation with sector agencies and stakeholder groups will be forthcoming.*
Objective(s): 1. To evaluate on-going and identifying in-situ and ex-situ biodiversity conservation and management approaches. 2. To consolidate research and development programs for *ex-situ* and *in-situ* conservation of biodiversity. 3. To coordinate and expand *in situ* and *ex situ* conservation activities.	*1. Reports on evaluation of in situ and ex situ biodiversity conservation activities with recommendations for actions that will inform continued efforts endorsed by key stakeholders and approved by Government.* *2. Management objectives and criteria developed for determining conservation effectiveness of in situ and ex situ initiatives.* *3. Feedback procedures to incorporate recommendations into on-going decision-making.* *4. Network for coordinating in situ and ex situ conservation initiatives established and functioning.*	*1. Education and awareness consultant Needs Assessment Report approved.* *2. Workshops and consultation reports with recommendations completed and endorsed by implementing agency and education and awareness consultant.* *3. Ongoing media promotion and distribution of flyers, posters, and other education and awareness materials using all forms of media.*	*1. Sustained political will to achieve effective management of the Guyana's biodiversity.* *2. Political will translates into adequate resources allocation to relevant institutions.* 3. *Financial resources are secured to implement activities.* *4. Collaboration and cooperation with sector agencies and stakeholder groups will be forthcoming.*

SUMMARIES	VERIFIABLE INDICATORS	MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS
4. To continue the development and establishment of the GPAS.			
Outputs:			
1. Coordinated and expanded *ex situ* conservation activities by December, 2008.	*Improved networking and documenting of ex situ conservation activities.* *Expansion in ex situ conservation activities.*	*Electronic database and web site of information.* *MoUs established among institutions for information sharing.*	*Full participation by sector agencies and willingness to share information.* *Adequate financial and technical resources available.*
2. Consolidated research and development programs for *in-situ* conservation of biodiversity by December, 2009.	*Improved documentation of in situ conservation initiatives and biodiversity.*	*Inventory of in situ conservation initiatives and research.* *Rapid Ecological Assessment of conservation sites.* *Database on biodiversity of conservation sites.* *Programme of research and monitoring for conservation sites.*	*Adequate financial and technical resources available.* *Full participation and support of stakeholders.* *Adequate financial and technical resources available.*
3. Development and expansion of Guyana's Protected Areas System (GPAS) beginning by January, 2008.	*Improved planning and management of protected areas within GPAS.*	*Demarcation of boundaries of PAs and internal zones.* *Management Plans for PAs prepared.* *Training and Capacity building of PA personnel.* *Livelihood opportunities created for local stakeholders.*	

SUMMARIES	VERIFIABLE INDICATORS	MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS
Activities:			
1. Coordinated and expanded *ex situ* conservation activities by December, 2008.			*Sustained political will to achieve effective management of the Guyana's biodiversity.*
a. Document all *ex situ* conservation activities currently being undertaken by different agencies in Guyana.	*Report produced.*	*Copies of report circulated.* *Report reviewed by key stakeholders.*	*Financial and technical resources are secured to implement activities.*
b. Develop a national network involving agencies engaged in *ex situ* conservation.	*Decision taken by EPA to establish network.*	*MoUs established between EPA and Agencies for information sharing.*	*Collaboration and cooperation with sector agencies and stakeholder groups will be forthcoming.*
c. Create an electronic database of agencies and the *ex situ* activities they are engaged in.	*EPA coordinates establishing and operation of the electronic database.*	*Electronic database completed and accessible to stakeholders.*	
d. Develop a national web-site that can be accessed by all participating agencies for the sharing and updating of information on *ex situ* conservation strategies.	*EPA coordinates development and maintenance of the web site.*	*Web site completed and functional.*	
e. Extend *ex situ* work being done at the zoological park and botanical gardens.	*Workplan for ex situ activities produced and approved for participating agencies and institutions.*	*Ex situ programmes and initiatives in zoo and botanical gardens extended and on-going.*	
f. Conduct stakeholder workshop to sensitise stakeholders about national *ex situ* conservation initiatives.	*Stakeholder workshop conducted.*	*Copies of workshop report available.*	
2. Consolidated research and development programmes for *in situ* conservation of biodiversity by December, 2009.			
a. Inventorise all *in situ* conservation			

SUMMARIES	VERIFIABLE INDICATORS	MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS
and research activities.	*Inventory report produced.*		
b. Conduct Rapid Ecological Assessments (REA) of specific sites identified for inclusion in the GPAS.	*REA Report produced.*	*Inventory report circulated.*	
c. Maintain a database of ecological information on all proposed GPAS sites.	*Database established and maintained.*	*REA Report circulated, available and accessible.*	
d. Coordinate a biodiversity research and monitoring programme for all GPAS sites to provide updated information for management decision-making.	*Programme established and Programme Framework document produced.* *Programme adopted by PAs.*	*Database accessible to stakeholders.* *Programme Framework document circulated to PA Planners and Managers.* *Data from research and monitoring being utilized for PA decision-making.*	
3. <u>Development and expansion of Guyana's Protected Areas System (GPAS) beginning by January, 2008.</u>			
a. Maintain an up to date inventory of established Protected Areas.	*Inventory report produced.*	*Inventory report circulated and available.*	
b. Provide and maintain basic infrastructure and equipment for conservation activities within GPAS sites.	*Infrastructure installed and equipment procured.*	*Infrastructure and equipment being used by PA personnel for management.*	
c. Determine and demarcate boundaries and borderlines of conservation zones and special activity areas within GPAS sites.	*Boundaries and borders of conservation zones and special activity areas within GPAS sites demarcated.*	*On-the-ground signage indicates borders and boundaries.*	
d. Develop management plans for GPAS sites.	*Management Plans prepared.*		
e. Continue capacity building initiatives for the effective management of GPAS sites.			

SUMMARIES	VERIFIABLE INDICATORS	MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS
f. Develop livelihood activities to enhance the GPAS sites for environmental and socio-cultural sustainability.	*Capacity building initiatives implemented.* *Livelihood activities identified and implemented.*	*PA Management Plans available and being used by PA Managers.* *Reports from capacity building initiatives.* *Reports from livelihood activities implementation.* *Number of local stakeholders benefiting from livelihood activities.*	

6.8 PROGRAMME AREA 8 - MONITORING (CROSS-CUTTING ISSUE)

Project Title

To improve biodiversity monitoring across sectors and to develop a feedback cycle to guide the implementation of biodiversity work programmes.

Project Justification

Many local studies, e.g. County Study on Biological Diversity (1992), concluded that there was a significant inadequacy in the knowledge and information relating to the components of biodiversity and also that there was relatively low levels of threats to Guyana's biodiversity. As the pressure of development (in forestry, mining, agriculture, and fisheries) intensifies, there is need to monitor the uses of the resources in the four thematic areas and the threats these resources face; and to ensure that the sustainable use and the sharing of benefits. Monitoring is therefore a key activity in terms of Guyana's meeting it's commitment to the Convention

Project Summary

The objective of this project is to undertake biodiversity monitoring in order to determine the overall status, changes in biodiversity, and the trends of biodiversity use. A "Draft Strategy for Biodiversity Monitoring and Sector Indicators" was developed in NBAP and this would serve as the basis for the project.

Project Duration

Two Years (2009 – 2010)

Executing Agency

Environmental Protection Agency

Collaborative Institutions

Guyana Forestry Commission
Ministry of Agriculture
Guyana Geology and Mines Commission
Fisheries Department
Wildlife Department

Outputs

1. Review the "Draft Strategy for Biodiversity Monitoring and Sector Indicators" and identify indicators across the four thematic areas under NBAP II by June, 2009.
2. Conduct pilot demonstration on the application of the indicators within a selected thematic area by December, 2009.
3. Develop and Implement a Monitoring and Evaluation Mechanism for the four Thematic Areas based on use of indicators by June, 2010.

Activities

1. Review the "Draft Strategy for Biodiversity Monitoring and Sector Indicators" and to identify indicators across the four thematic areas under NBAP II by June, 2009.

   a. EPA conducts stakeholder workshop with key representative stakeholders to present and discuss draft Strategy.
   b. Reach agreement on indicators across the four thematic areas.

2. *Conduct pilot demonstration on the application of the indicators within a selected thematic area by December, 2009.*

    a. EPA identifies a thematic area for conducting the pilot demonstration.
    b. EPA develops an approach to the pilot demonstration and engages with key stakeholders on mechanisms for implementation.
    c. EPA, in collaboration with key institutions representative of the thematic area, implements pilot demonstration.

3. *Develop and Implement a Monitoring and Evaluation Mechanism for the four Thematic Areas based on use of indicators by June, 2010.*

    a. EPA develops a Monitoring and Evaluation Mechanism based on the experience from the pilot demonstration activity and the Strategy document.
    b. EPA organizes forum and presents Monitoring and Evaluation Mechanism for the input and support of key stakeholders.
    c. EPA presents Monitoring and Evaluation Mechanism to NREAC for approval.
    d. Monitoring and Evaluation Mechanism incorporated into Annual and Operations Planning of key institutions and organizations.

Table 21. Log Frame for Programme Area 8 – Monitoring.

SUMMARIES	VERIFIABLE INDICATORS	MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS
Goal: To improve biodiversity monitoring across sectors and to develop a feedback cycle to guide the implementation of biodiversity work programmes.	1. *Established Monitoring and Evaluation Mechanism.* 2. *Support from sector agencies and institutions in conducting monitoring and evaluation and in implementing biodiversity work programmes.*	1. *NREAC approval of Monitoring and Evaluation Mechanism.* 2. *Sector Agencies and Institutions assisting and collaborating with EPA in monitoring and evaluation exercises across Thematic Areas as well as supporting and taking the lead on activities as part of thematic area biodiversity work programmes.*	1. *Sustained political will to make decision for effective management of Guyana's biodiversity.* 2. *Political will translates into adequate resources allocation to relevant institutions.* 3. *Financial resources are secured to implement activities.* 4. *Collaboration and cooperation with sector agencies and stakeholder groups will be forthcoming.*
Objectives: To undertake biodiversity monitoring across thematic areas to guide the implementation of work programmes and meeting UNCBD obligations.	1. *Indicators identified for thematic areas.* 2. *Monitoring activities being conducted across thematic areas.* 3. *Monitoring and Evaluation reports guiding implementation of thematic area work programmes.*	1. *Report from stakeholder workshop.* 2. *Reports from monitoring activities.* 3. *Status reports on the implementation of work programmes.*	1. *Political will translates into adequate resources allocation to relevant institutions.* 2. *Financial resources are secured to implement activities.* 3. *Collaboration and cooperation with sector agencies and stakeholder groups will be forthcoming.*
Outputs: 1. Review the "Draft Strategy for Biodiversity Monitoring and Sector Indicators" and identify indicators across the four thematic areas under NBAP II by June, 2009.	*Review Report produced.* *Thematic Area identified by EPA.*	*Copies of report circulated.* *Report reviewed by key agencies and stakeholders and feedback provided.*	*Full participation by sector agencies and stakeholders.* *Full participation by sector agencies*

SUMMARIES	VERIFIABLE INDICATORS	MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS
			and stakeholders.
2. Conduct pilot demonstration on the application of the indicators within a selected thematic area by December, 2009.	*Pilot Demonstration Plan produced by EPA.*	*Record of decision.* *Copies of Plan circulated.* *Report reviewed by key agencies and stakeholders from thematic area and feedback provided.*	*Sector agencies provide support, assign staff and allocate resources.*
3. Develop and Implement a Monitoring and Evaluation Mechanism for the four Thematic Areas based on use of indicators by June, 2010.	*Monitoring and Evaluation Mechanism Proposal prepared with input from stakeholders and reviewed by NREAC.* *Monitoring and Evaluation Mechanism adopted by sector agencies.*	*Status reports prepared and circulated.* *Copies of proposal circulated.* *Report from stakeholder review forum.* *Minutes of NREAC meeting.* *Monitoring and Evaluation Mechanism incorporated into annual and operations plans of agencies.*	*Sector agencies willing to allocate technical and financial resources.*
Activities:			
1. Review the "Draft Strategy for Biodiversity Monitoring and Sector Indicators" and to identify indicators across the four thematic areas under NBAP II by June, 2009			*Political will translates into adequate resources allocation to relevant institutions.* *Financial resources are secured to implement activities.*
a. EPA conducts stakeholder workshop with key representative stakeholders and presents and discusses draft Strategy.	*Cross-section of stakeholders attends workshop and makes input.*	*Report from workshop.*	*Collaboration and cooperation with sector agencies and stakeholder groups will be forthcoming.*
b. Reach agreement on indicators across four thematic areas	*Stakeholders in each thematic area understand, support, and endorse indicators.*	*List of indicators available for each thematic area.*	
2. Conduct pilot demonstration on the			

SUMMARIES	VERIFIABLE INDICATORS	MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS
<u>application of the indicators within a selected thematic area by December. 2009.</u> a. EPA identifies a thematic area for conducting the pilot demonstration. b. EPA develops an approach to the pilot demonstration and engages with key stakeholders on mechanisms for implementation. c. EPA, in collaboration with key institutions representative of the thematic area, implements pilot demonstration. 3. <u>Develop and Implement a Monitoring and Evaluation Mechanism for the four Thematic Areas based on use of indicators by June, 2010.</u> a. EPA develops a Monitoring and Evaluation Mechanism based on the experience from the pilot demonstration activity and the	*EPA, with guidance from key stakeholders through the NBAC, identifies thematic area.* *EPA prepares implementation plan for pilot demonstration.* *EPA engages with sector institutions and receives support for implementation.* *EPA assigns staff responsible for implementing pilot demonstration.* *Sector agencies provide support to implementation.* *EPA coordinates implementation and reporting.*	*Report from workshop.* *Decision from NBAC meeting.* *Implementation Plan.* *Notes from engagements and letters of support from sector institutions.* *Terms of Reference of staff responsibilities.* *Sector agencies assign staff to assist and provide in-kind and other support.* *Implementation Report.*	

SUMMARIES	VERIFIABLE INDICATORS	MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS
Strategy document. b. EPA organizes forum and presents Monitoring and Evaluation Mechanism for the input and support of key stakeholders. c. EPA presents Monitoring and Evaluation Mechanism to NREAC for approval. d. Monitoring and Evaluation Mechanism incorporated into Annual and Operations Planning of key institutions and organizations.	*EPA involves key stakeholders to discuss and review results of pilot demonstration and to prepare Monitoring and Evaluation Mechanism.* *Cross-section of stakeholders attend forum and make input.* *Stakeholders support Monitoring and Evaluation Mechanism.* *NREAC discusses Monitoring and Evaluation Mechanism and takes decision to support.* *Sector Agencies and Institutions are participating in activities of the Monitoring and Evaluation Mechanism and review the implementation of these activities as part of their wider work programmes.*	*Record of stakeholder engagements.* *Paper outlining Monitoring and Evaluation Mechanism.* *Report from forum.* *Report from forum.* *Record of NREAC decision.* *Implementation of Monitoring and Evaluation Mechanism included in annual reviews of institutions work programmes.*	

6.9 PROGRAMME AREA 9 - PROMOTING SUSTAINABLE INITIATIVES IN THE AGRICULTURE SECTOR

Project Title

Promote and support the development of sustainable initiatives in agriculture through the development of organic agriculture with focus on Region 1, Guyana.

Project Justification

There have been several initiatives aimed at promoting organic agriculture in Guyana, in particular Region 1, with varying levels of success. Government has recently declared Region 1 as the region for the promotion of organic agriculture in Guyana with a push towards supporting value-adding involving use of NTFPs as well as bio-fuels. This Region has long been recognized for its agriculture potential and this project will form a key initiative in facilitating Guyana's national agriculture diversification strategy, promote sustainable livelihoods at the community level as well as facilitate certification of some organic products from the Region.

Project Summary

This project seeks to first of all review and assess the progress and experience of organic agriculture initiatives in Region 1 in an effort to identify the key issues and challenges and to prepare a Strategy and Action Plan for promotion and development of organic agriculture in the Region in keeping with Government's push. This Strategy and Action Plan will serve as a pilot approach and form part of the national agriculture diversification strategy.

Project Duration

Three Years (2009 – 2011)

Executing Agency

Environmental Protection Agency

Collaborative Institutions

Ministry of Agriculture
Ministry of Amerindian Affairs
Ministry of Local Government and Regional Development

Outputs

1. Assessment of the progress of organic agriculture in Guyana by June, 2009.
2. Strategy and Action Plan (SAP) for the promotion and development of Organic Agriculture in Guyana using Region 1 as pilot study by December, 2009.
3. Implementation of the Strategy and Action Plan beginning June, 2010.

Activities

Output 1 .Assessment of the progress of organic agriculture in Guyana by June, 2009.

a. Develop Terms of Reference for Consultant to conduct assessment.
b. Consultant adopts participatory approach to exercise.
c. Assessment report is endorsed by stakeholders and presented to Government.

Output 2. Strategy and Action Plan (SAP) for the promotion and development of Organic Agriculture in Guyana using Region 1 in a pilot study by December, 2009.

a. Develop Terms of Reference for team of consultants to prepare SAP.
b. Recruit team of consultants.
c. Consultants adopt participatory approach to the preparation of the SAP.
d. SAP is endorsed by stakeholders and presented to Government for endorsement.

Output 3. Implementation of the Strategy and Action Plan beginning by June, 2010.

a. Government indicates its support to the SAP.
b. Government convenes fora with donors, NGOs and private sector to discuss funding and other support for the implementation of the SAP.
c. Activities of the SAP being implemented.

Table 22. Log Frame for Programme Area 9 - Promoting Sustainable Initiatives in the Agriculture Sector.

SUMMARIES	VERIFIABLE INDICATORS	MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS
Goal: To promote and support the development of sustainable initiatives in agriculture.	1. *Policies, plans and programmes for the development, expansion and diversification of the agriculture sector.* 2. *Institutional support provided for sustainable initiatives.*	1. *Approved Policies and Strategy for traditional and non-traditional crops.* 2. *Agriculture Diversification Strategy developed and approved.* 3. *Government actively seeking donor, bi-lateral and multi-lateral support for the development of sustainable agriculture initiatives with over 10 support projects initiated.* 4. *Incentives scheme developed and incentives are provided to farmers for investments in sustainable agricultural practices.*	1. *Sustained political will to support initiatives.* 2. *Political will translates into adequate resources allocation to relevant institutions.* 3. *Financial resources are secured to implement activities.* 4. *Institutions at the regional and local level remain committed to initiatives.*
Objective(s): To promote organic agricultural practices in Guyana.	1. *Assessment of the progress of organic agriculture in Guyana and the key issues and challenges faced in producing and marketing the produce.* 2. *Strategy and Action Plan prepared for the development of promoting Organic Agriculture in Guyana using Region 1 in a pilot study to inform other Regions.* 3. *Implementation of the Strategy and Action Plan.*	1. *Report presented to and approved by Government.* 2. *Stakeholders engaged in the preparation of the Strategy and Action Plan which receives consensus support and is endorsed by the Government.* 3. *Progress Reports on implementation prepared and are available to all stakeholders.*	

SUMMARIES	VERIFIABLE INDICATORS	MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS
Outputs:			
1. Assessment of the progress of organic agriculture in Guyana by June, 2009.	*Assessment report produced.*	*Copies of report circulated to stakeholders. Report reviewed and feedback presented.*	*Stakeholders in the ground willing to participate and provide information.*
2. Strategy and Action Plan (SAP) for the promotion and development of Organic Agriculture in Guyana using Region 1 in a pilot study by December, 2009.	*Strategy and Action Plan prepared.*	*Copies of Strategy and Action Plan circulated to stakeholders. Report reviewed and feedback presented.*	*Political will by Government.*
	SAP approved by Government.	*Record of presentation to the Minister of Agriculture. Copy of Cabinet decision of approval.*	*Adequate financial resources are secured.*
3. Implementation of the Strategy and Action Plan beginning by June, 2010.	*Government engages donors for financial support.*	*Records of engagements and indication of support from organizations.*	*Stakeholders are willing to be involved and participate.*
	Activities of SAP being implemented.	*Progress Reports on SAP Implementation. Feedback from stakeholders.*	
Outputs and Activities:			
1. <u>Assessment of the progress of organic agriculture in Guyana by June, 2009.</u>			
a. Develop Terms of Reference for Consultant to conduct assessment.	*a. Terms of Reference prepared.*	*a. Approved Terms of Reference.*	
b. Consultant adopts participatory approach to exercise.	*b. Site visits, workshop and meetings conducted.*	*b. Records of visits and notes and minutes from stakeholder engagements.*	
c. Assessment report is endorsed by stakeholders and presented to Government.	*c. Stakeholders provide feedback on Assessment Report. Formal presentation of Report to the Minister of Agriculture.*	*c. Records of stakeholder feedback and endorsement. Record of presentation of Report to the Minister of Agriculture.*	
2. <u>Strategy and Action Plan (SAP) for the promotion and development of Organic</u>			

SUMMARIES	VERIFIABLE INDICATORS	MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS
Agriculture in Guyana using Region 1 in a pilot study by December, 2009. a. Develop Terms of Reference for team of consultants to prepare SAP. b. Recruit team of consultants. c. Consultants adopt participatory approach to the preparation of the SAP. d. SAP is endorsed by stakeholders and presented to Government for endorsement. 3. Implementation of the Strategy and Action Plan beginning by June, 2010. a. Government indicates its support to the SAP. b. Government convenes fora with donors, NGOs and private sector to discuss funding and other support for the implementation of the SAP. c. Activities of the SAP being implemented	*Terms of reference developed.* *Consultants hired.* *Site visits, workshop and meetings conducted.* *Stakeholders provide feedback on SAP.* *Formal presentation of SAP to the Minister of Agriculture.* *SAP submitted to Cabinet* *Cabinet takes decision on SAP.* *Number of organizations engaged by Government to seek support.*	*Approved Terms of Reference.* *Signed contract with consultants.* *Records of visits and notes and minutes from stakeholder engagements.* *Records of stakeholder feedback and endorsement.* *Record of presentation of Report to the Minister of Agriculture.* *Record of submission to Cabinet (letter/memo).* *Written Cabinet decision received by the Minister of Agriculture.* *Records of engagements and indication of support from organizations.* *Funds being allocated by donors and support organizations for activities.*	

SUMMARIES	VERIFIABLE INDICATORS	MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS
	Communities and NGOs involved in initiatives are being supported financially or in-kind.	*Progress Reports on implementation of SAP.*	

6.10 PROGRAMME AREA 10 - SUSTAINABLE INITIATIVES IN THE FORESTRY SECTOR

Project Title

Develop protocols and project concepts for the sustainable and economic utilisation of Non-Timber Forest Products (NTFPs) in hinterland communities in Guyana.

Project Justification

During stakeholder engagements, many community representatives voiced concerns that during normal logging operations in the vicinity of their communities, little or no consideration is paid to the potential value of non-timber forest products. Against the backdrop of rural poverty and the lack of livelihood alternatives, this is considered unnecessarily wasteful and a missed economic opportunity. In addition, it is felt that where some successful projects were occurring in Guyana or elsewhere, the sharing of information and lessons learned among other communities were generally poor.

Project Summary

The project seeks to contribute to improved livelihoods for hinterland communities through sustainable and economically viable utilisation of NTFPs. It will review success stories from Guyana and elsewhere and identify potential NTFPs and their markets. In collaboration with communities, protocols for sustainable utilisation, processing/manufacturing and marketing of NTFPs will be developed. These protocols will be used as the basis for promoting NTFP use throughout hinterland communities in Guyana *via* practical, on-the-ground dissemination. Once the potential for NTFPs is appreciated, a process led by the communities to develop specific projects and identify sources of seed capital will be supported.

Project Duration

Two Years (2007-2009)

Lead Agency

Guyana Forestry Commission

Collaborative Institutions

Forest Products Marketing Council of Guyana
Ministry of Amerindian Affairs
Environmental Protection Agency
Iwokrama
UNDP

Outputs

1. Report on success stories in NTFP utilisation by December, 2007.
2. List of NTFPs in Guyana of potential economic value and potential markets by June, 2008.
3. Outreach and awareness programme to selected communities by December, 2008.
4. Protocols for sustainable utilisation of NTFPs by communities by June, 2009.
5. Community-specific project concepts and potential funding sources by December, 2009.

Activities

Output 1.Report on success stories in NTFP utilisation by December, 2007.

a. Review successful NTFP utilisation projects undertaken by communities in Guyana and elsewhere.

Output 2.List of NTFPs in Guyana of potential economic value and potential markets by June, 2008.

a. Identify NTFPs in Guyana with economic potential.
b. Identify potential markets for NTFPs.

Output 3.Outreach and awareness programme to selected communities by December, 2008.

a. Interact with communities to develop sustainable and economically viable utilisation protocols.

Output 4.Protocols for sustainable utilisation of NTFPs by communities by June, 2009.

a. Undertake outreach and awareness programme into communities to promote sustainable use of NTFPs.

Output 5.Community specific project concepts and potential funding sources by December, 2009.

a. Liaise with communities and key agencies to develop community-specific project proposals and identify potential sources of seed capital.

Table 23. Log Frame for Programme Area 10 - Sustainable Initiatives in the Forestry Sector.

SUMMARIES	VERIFIABLE INDICATORS	MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS
Goal: To encourage the development of alternative income-generating livelihood projects for forest-dwelling communities in Guyana.	*1. Increase in the number of income-generating projects in hinterland communities.* *2. Improvement in livelihoods for hinterland communities Guyana.*	*1. Government statistics.* *2. Income and welfare statistics and reports from indigenous organisations.*	*1. Government of Guyana continues its commitment to the development of hinterland communities.* *2. Political will translates into adequate resources allocation to relevant institutions.*
Objective: To identify projects to enhance the economic and sustainable utilisation of NTFPs by hinterland communities.	*1. Increase in the number of income-generating projects proposed for hinterland communities by 2009.*	*1. Government and relevant Agency statistics.*	*1. NTFPs with economic potential are available in sufficient quantities.* *2. Communities are receptive to NTFP development projects.*
Outputs: 1. Report on success stories in NTFP utilisation by December, 2007. 2. List of NTFPs in Guyana of potential economic value and potential markets by June, 2008. 3. Outreach and awareness programme to selected communities by December, 2008. 4. Protocols for sustainable utilisation of NTFPs by communities by June, 2009. 5. Community specific project concepts and potential funding sources by December, 2009.	*Review of successful NTFP utilisation projects completed.* *Identification of NTFPs and potential markets completed.* *Outreach and awareness programme completed.* *Protocols for sustainable utilisation produced.* *List of community-specific project proposals for development of NTFPs completed.*	*Report on review of NTFP utilisation projects.* *Matrix of potential NTFPs and markets.* *Notes from community meetings and report on outreach programme.* *Written protocols.* *Final report listing community-specific projects and potential funding sources.*	*Funding for project activities is available in a timely manner.* *Potential markets for NTFPs are available.* *Communities are receptive to outreach programme.* *Communities are willing to engage in development of protocols.*

SUMMARIES	VERIFIABLE INDICATORS	MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS
Activities:			
Output 1. Report on success stories in NTFP utilisation by December, 2007.			
a. Review successful NTFP utilisation projects undertaken by communities in Guyana and elsewhere.	*Success stories compiled.*	*Relevant progress reports and meeting notes.*	*Communities, responsible agencies and private organisations work together in a synergistic manner.*
Output 2. List of NTFPs in Guyana of potential economic value and potential markets by June, 2008.			
a. Identify NTFPs in Guyana with economic potential.	*NTFPs identified.*	*Relevant progress reports and meeting notes.*	
Output 3. Outreach and awareness programme to selected communities by December, 2008.			
a. Interact with communities to develop sustainable and economically viable utilisation protocols.	*Interaction with communities completed.*	*Record of Interviews with communities and meetings.*	
Output 4. Protocols for sustainable utilisation of NTFPs by communities by June, 2009,			
a. Undertake outreach and awareness programme into communities to promote sustainable use of NTFPs.	*Outreach and awareness developed and undertaken.*	*Materials available.* *Records of meetings and discussions.*	
Output 5. Community-specific project concepts and potential funding sources by December, 2009			
a. Liaise with communities and key agencies to develop community-specific project proposals and identify potential sources of seed capital.	*Liaison with communities achieved.*	*Records of engagements.*	

6.11 PROGRAMME AREA 11 - HABITAT DESTRUCTION AND ASSOCIATED IMPACTS

Project Title

The effective management Guyana's coastal biodiversity to minimize and prevent the destruction of coastal habitats and protect Guyana's coastal biological diversity.

Project Justification

The coastal zone of Guyana is of prime importance since 90% of Guyana's population is located there. It consists of the most fertile agriculturally suitable soils, and comprises a range of ecosystems. Due to anthropogenic activities, the pressures from development, as well as threats from natural phenomenon such as climate and weather, Guyana's coastal zone, its ecosystems and biodiversity are under threat.

Degradation of coastal mangrove ecosystems has caused great stress to other coastal habitats. Given the projected impacts of global warming and sea level change, many coastal habitats and associated biodiversity will be even under greater threat.

Project Summary

The goal of this project is to foster the effective management and monitoring of Guyana's coastal biodiversity so as to minimize and prevent the destruction of coastal habitats and so protect the country's coastal biological diversity. It also seeks to promote the maintenance of good ecosystem integrity for established ecological processes, protection and maintenance of coastal biological diversity and other natural values and maintenance of natural attributes and qualities of the coastal habitat over the long-term.

Ultimately, this project seeks to maintain in as natural a state as possible, representative examples of coastal physiographic characteristics, coastal biotic communities, coastal genetic resources and coastal species to provide ecological stability and diversity.

Project Duration

Three Years (2008-2010).

Executing Agency

Environmental Protection Agency.

Collaborative Institutions

All stakeholder agencies with vested interests and operations along coastal Guyana.

Outputs

1. Inventory of major coastal habitats and ecosystem types by June, 2008.
2. Rapid ecological status assessment to determine richness of biodiversity at the coastal habitats by December, 2008.
3. Biogeographic assessment of coastal habitats to identify priority areas for action by June, 2009.
4. Assessment of the demand and uses, economic, social and cultural to which coastal habitats and ecosystems in Guyana are put by December, 2009.
5. Training of relevant officers in rapid assessment techniques by June, 2010.
6. Workshops to sensitise stakeholders on activities and issues regarding coastal habitats, impacts, monitoring and management measures for maintaining ecosystem and habitat integrity by December, 2010.

Activities

1. *Inventory of major coastal habitats and ecosystem types by June, 2008.*

    a. Develop Terms of Reference for consultant to undertake inventory assignment.
    b. Recruit consultant.
    c. Conduct inventory assignment with EPA providing lead role and support mechanisms.

1. *Rapid ecological status assessment to determine richness of biodiversity at the coastal habitats by December, 2008.*

    a. Develop Terms of Reference for consultant to undertake ecological assessment.
    b. Recruit consultant.
    c. Conduct ecological assessment with EPA providing lead role and support mechanisms.

2. *Biogeographic assessment of coastal habitats to identify priority areas for action by June, 2009.*

    a. Develop Terms of Reference for consultant to undertake biogeographic assessment of coastal habitats.
    b. Recruit consultant.
    c. Conduct biogeographical assessment of coastal habitats, with EPA providing lead role and support mechanisms.

3. *Assessment of the demand and uses, economic, social and cultural to which coastal habitats and ecosystems in Guyana are put by December, 2009.*

    a. Develop Terms of Reference for consultant to undertake assignment.
    b. Recruit consultant.
    c. Conduct assignment with EPA providing lead role and support mechanisms.

4. *Training of relevant officers in rapid assessment techniques by June, 2010.*

    a. Develop Terms of Reference for consultant to train stakeholders in rapid assessment techniques.
    b. Recruit consultant.
    c. Conduct training with EPA providing lead role and support mechanisms.

5. *Workshops to sensitise stakeholders on activities and issues regarding coastal habitats, impacts, monitoring and management measures for maintaining ecosystem and habitat integrity by December, 2010.*

    a. Develop Terms of Reference for consultant to conduct workshops.
    b. Recruit consultant.
    c. Conduct workshops with EPA providing lead role and support mechanisms.

Table 24. Log Frame for Programme Area 11 - Habitat Destruction and Associated Impacts.

SUMMARIES	VERIFIABLE INDICATORS	MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS
Goal: To foster the effective management and monitoring of Guyana's coastal biodiversity so as to minimize and prevent the destruction of coastal habitats and so protect the country's coastal biological diversity.	*1. Improved management of coastal habitats and ecosystems.* *2. Improved management of coastal species.* *3. Management Plans for selected habitats, ecosystems and species developed and available to all stakeholder groups.* *4. Collaboration by stakeholders through the endorsement of Management Plans and effective implementation.*	*1. Collaboration by stakeholders through the endorsement of Management Plans and effective implementation.*	*1. Sustained political will to achieve effective management of coastal habitats and ecosystems.* *2. Political will translates into adequate resources allocation to relevant institutions.* *3. Effective monitoring and enforcement measures are in place.*
Objective(s): 1. To preserve habitats, ecosystems and species in as undisturbed a state as possible. 2. To maintain established ecological processes. 3. To protect and maintain the biological diversity and other natural values of the area in the long-term.	*1. Inventory of coastal habitat types and locations prepared with active participation of key stakeholder groups.* *2. Rapid assessment of the priority habitat completed.* *3. Rapid assessment of the priority species completed.* *4. Assessment reports endorsed by the key stakeholder groups.*	*1. Completed inventory of coastal habitat types and locations available and circulated to key stakeholder groups.* *2. Completed report of Rapid assessment of the priority habitat available and distributed to key stakeholder groups.* *3. Completed report of Rapid assessment of the priority species available and distributed to key stakeholder groups.* *4. Assessment reports endorsed by key stakeholder groups.*	*1. Sustained political will to achieve effective management of coastal habitats and ecosystems.* *2. Political will translates into adequate resources allocation to relevant institutions.* *3. Effective monitoring and enforcement measures are in place.* *4. Stakeholders will consent and be fully involved in the process.*
4. To maintain the essential natural attributes and qualities of the coastal habitat over the long-term.	*1. Determination of estimates of extent and condition of critical habitats.* *2. Population estimates of key species.*	*1. Population estimates of key species completed.*	*1. Sustained political will to achieve effective management of coastal habitats and ecosystems.*

SUMMARIES	VERIFIABLE INDICATORS	MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS
5. To secure and maintain the habitat conditions necessary to protect significant groups of species, biotic communities or physical features of the environment where those require specific human manipulation for optimum management.	*3. Determination of extent of encroachment considered inimical to integrity of habitat.* *4. Register of non-conforming uses and activities.* *5. Determination of extent of ecosystem and habitat stresses.*	*2. Estimates of extent and condition of critical habitats completed.* *3. Extent of encroachment considered inimical to integrity of habitat determined and available in GIS or map format.* *4. Register of non-conforming uses and activities available and circulated to key stakeholders.* *5. Extent of ecosystem and habitat stresses determined.*	*2. Political will translates into adequate resources allocation to relevant institutions.* *3. Effective monitoring and enforcement measures are in place.* *4. Stakeholders will consent and be fully involved in the process.*
6. To perpetuate, in as natural a state as possible, representative examples of coastal physiographic characteristics, coastal biotic communities, coastal genetic resources and coastal species to provide ecological stability and diversity.	*1. Indicators selected to reflect key processes for the particular ecosystem and habitat involved.*	*1. Indicators selected to reflect key processes for the particular ecosystem and habitat involved.*	*1. Sustained political will to achieve effective management of coastal habitats and ecosystems.* *2. Political will translates into adequate resources allocation to relevant institutions.* *3. Effective monitoring and enforcement measures are in place.* *4. Stakeholders will consent and be fully involved in the process.*
Outputs: 1. Inventory of major coastal habitats and ecosystem types by June, 2008. 2. Rapid ecological status assessment to determine richness of biodiversity at the coastal habitats by December 2008. 3. Biogeographic assessment of coastal habitats to identify priority areas for	*Inventory Report produced.* *Assessment Report produced.*	*Copies of report circulated. Report reviewed by stakeholders and feedback provided.* *Copies of report circulated. Report reviewed by stakeholders and feedback provided.*	*Stakeholders willing to participate and provide data and information.* *Adequate financial resources are allocated.* *Access to coastal habitats is possible.* *Stakeholders willing to accept findings and recommendations.*

SUMMARIES	VERIFIABLE INDICATORS	MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS
action by June, 2009. 4. Assessment of the demand and uses, economic, social and cultural to which coastal habitats and ecosystems in Guyana are put by December, 2009. 5. Training of relevant officers in rapid assessment techniques by June, 2010. 6. Workshops to sensitise stakeholders on activities and issues regarding coastal habitats, impacts, monitoring and management measures for maintaining ecosystem and habitat integrity by December, 2010.	*Assessment Report produced.* *Assessment Report produced.* *Schedule of training activities developed, target stakeholders identified and arrangements made.* *Schedule of workshops developed, target stakeholders identified and arrangements made.*	*Copies of report circulated.* *Report reviewed by stakeholders and feedback provided.* *Copies of report circulated.* *Report reviewed by stakeholders and feedback provided.* *Reports from training activities.* *Number of participants at training.* *Reports from workshops.* *Number of participants.*	*Stakeholders willing to participate.* *Adequate financial resources are allocated.* *Stakeholders willing to participate.* *Adequate financial resources are allocated.*
Activities: 7. <u>Inventory of major coastal habitats and ecosystem types by June, 2008.</u> a. Develop Terms of Reference for consultant to undertake inventory assignment. b. Recruit consultant. c. Conduct inventory assignment with EPA providing lead role and support mechanisms. 8. <u>Rapid ecological status assessment to determine richness of biodiversity at the coastal habitats by December, 2008.</u> a. Develop Terms of Reference for consultant to undertake ecological assignment.	*Terms of Reference prepared.* *Consultant hired.* *Inventory report prepared.* *Terms of Reference prepared.*	*Copy of Terms of Reference available.* *Signed contract available.* *Copies of report circulated.* *Report reviewed by stakeholders and feedback provided.* *Copy of Terms of Reference available.*	*Stakeholders willing to participate and provide data and information.* *Adequate financial resources are allocated.* *Stakeholders willing to allocate financial and human resources to activities.*

SUMMARIES	VERIFIABLE INDICATORS	MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS
b. Recruit consultant.			
c. Conduct ecological assessment with EPA providing lead role and support mechanisms.	*Consultant hired.* *Assessment report prepared.*	*Signed contract available.* *Copies of report circulated.* *Report reviewed by stakeholders and feedback provided.*	
9. <u>Biogeographic assessment of coastal habitats to identify priority areas for action by June, 2009</u>.			
a. Develop Terms of Reference for consultant.	*Terms of Reference prepared.*	*Copy of Terms of Reference available.*	
b. Recruit consultant.			
c. Conduct biogeographic assessment of coastal habitats with EPA providing the lead role and support mechanisms.	*Consultant hired.* *Inventory report prepared.*	*Signed contract available.* *Copies of report circulated.* *Report reviewed by stakeholders and feedback provided.*	
10. <u>Assessment of the demand and uses, economic, social and cultural, to which coastal habitats and ecosystems in Guyana are put by December, 2009.</u>			
a. Develop Terms of Reference for consultant.			
b. Recruit consultant.	*Terms of Reference prepared.*	*Copy of Terms of Reference available.*	
c. Conduct assignment with EPA providing lead role and support mechanisms.	*Consultant hired.* *Assessment report prepared.*	*Signed contract available.* *Copies of report circulated.*	
11. <u>Training of relevant officers in rapid assessment techniques by June, 2010.</u>		*Report reviewed by stakeholders and feedback provided.*	
a. Develop Terms of Reference for Training Coordinator.			
b. Recruit Coordinator.			

SUMMARIES	VERIFIABLE INDICATORS	MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS
d. Develop Training Course.	*Terms of Reference prepared.*	*Copy of Terms of Reference available.*	
e. Implement Training Course with EPA providing lead role and support mechanisms.	*Coordinator hired.* *Training Course and Manuals prepared.* *Arrangements in place for Training.*	*Signed contract available.* *Copy of Training Course and Manuals available.*	
12. <u>Workshops to sensitise stakeholders on activities and issues regarding coastal habitats, impacts, monitoring and management measures for maintaining ecosystem and habitat integrity by December, 2010.</u>		*Report from Training.* *Record of attendance.* *Evaluation provided by participants.*	
a. Develop Terms of Reference for Consultant to implement workshops.			
b. Recruit consultant.	*Terms of Reference prepared.*	*Copy of Terms of Reference available.*	
c. Develop Workshop Programme and Materials.	*Consultant hired.* *Programme and Materials prepared.*	*Signed contract available.* *Copy of Programme and Materials available.* *Reports from Workshops.* *Record of attendance.* *Evaluation provided by participants.*	

6.12 PROGRAMME AREA 12 - MARINE AND INLAND WATER RESOURCES

Project Title

Promoting sustainable initiatives in the marine and inland water resources sector.

Project Justification

In this NBAP II, a number of sustainable initiatives in the marine and inland water resources sector was identified, and a sample of these are:-

- Sustainable exploitation of marine species (seabob fishery management plan, artisanal fishery management plan, etc.);
- Institutional Strengthening of Human Resources;
- Development of Department of Fisheries;
- Consolidation of policy and legal framework for Aquaculture;
- Monitoring of fresh water quality; and
- Enforcement of regulations in the interior locations.

However, only the project concept for the seabob (*Xiphopenaeus kroyeri*) management is being developed because of the importance of the fishery. The seabob fishery accounts for over 60 % of the value of Guyana's seafood exports but there has been reduced catches for the last two years, but there is a tendency by operators to over-fish in order to compensate for the high price of fuel. Also, there is an inadequacy of biological information for this species; the establishment of new processing plants is not controlled; and the threat of seeing a resource collapse as has happened with prawns are reasons why immediate action is required on the seabob. This project will have a greater and immediate impact than addressing aquaculture for which there exists a draft Aquaculture Bill and guidance could be obtained from many FAO documents and the local Environmental Protection Act to streamline its development. Also, despite the concern regarding the negative impacts of logging, mining, agricultural activities, etc. and the growing demand for fresh water, efforts are being expended to address this situation. On that basis, the seabob project concept has been deemed the most important.

Project Summary

The marine and inland water resources provide significant benefits, and there is the need to ensure that these resources continue to meet future needs. The seabob (*Xiphopenaeus kroyeri*), one of the main targeted marine resources in the fisheries sector, is threatened. This project aims to have the seabob management strategy which currently forms part of the wider Fisheries Management Plan implemented. The implementation of this strategy will allow for seabob stocks to be maintained at all times above 50% of its mean unexploited level; non-target species should also be maintained above 50% of their mean biomass levels and, the net income of operators needs to be stabilized. The strategy will require, among other actions, limiting the fleet size, enforcing closed seasons, fixing the fishing area, etc.

Project Duration

Two Years (2008 - 2009)

Executing Agency

Ministry of Agriculture, Fisheries Department (DOF)

Collaborative Institutions

Caribbean Regional Fisheries Mechanism (CFRM)
Guyana Association of Trawler Owners and Seafood Processors
Environmental Protection Agency (EPA)

Outputs

1. Plan of Action for implementing Seabob Management Strategy by June, 2008.
2. Government approval of Management Strategy by September, 2008.
3. Establish legal framework for the implementation of the strategy by March, 2009.
4. Implementation of Strategy beginning by April, 2009.

Activities

1 .Plan of Action for implementing Seabob Management Strategy by June, 2008.

a. Conduct workshop to sensitise stakeholders on the Seabob Management Strategy.
b. Develop a Plan of Action for the implementation of the Strategy.

2. Government approval of Management Strategy by September, 2008.

a. Present strategy to the Minister of Agriculture and Cabinet for approval.

3. Establish legal framework for the implementation of the Strategy by March, 2009.

a. Develop Terms of Reference for Legal Expert to prepare Regulations.
b. Recruit Legal Expert.
c. Regulations prepared.
d. Minister presents Regulations to Parliament under the Fisheries Act.

4. Implementation of Strategy beginning April, 2009.

a. Agreement and adherence among trawler owners and operators and medium-scale fishermen on closed season.
b. Monitoring and enforcement by Coast Guard and Fisheries Division of Regulations.

Table 25. Log Frame for Programme Area 12 - Marine and Inland Water Resources.

SUMMARIES	VERIFIABLE INDICATORS	MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS
Goal: To promote activities that would contribute to the sustainable use of marine and inland resources.	1. *Effective implementation of Management Strategy programme to generate information on seabob resources and the management of that fishery.*	1. *Strategy prepared and received consensus support from stakeholders and approved by Cabinet.* 2. *Regulations approved by Parliament.* 3. *Fisheries stakeholders are adhering to Regulations.* 4. *Coast Guard and Fisheries Department are monitoring and enforcing Regulations.*	1. *Political will to make decisions for the effective management of coastal habitats and ecosystems.* 2. *Fisheries Stakeholders are able to make a consensus decision and stick to it.* 3. *Political will translates into adequate technical and financial resources allocation to relevant institutions.* 4. *Effective monitoring and enforcement measures are in place.*
Objective: To implement a management strategy for the seabob fishery in order to maintain genetic stock while sustaining income levels for fishermen.	1. *Stakeholders engaged on the seabob Management Strategy.* 2. *Government approves Strategy.* 3. *Regulations prepared and passed in Parliament to make Strategy actions a legal requirement.* 4. *Government implementing Strategy.*	1. *Records of discussions, meetings and workshops.* 2. *Cabinet decision on strategy.* 3. *Parliament approval of Regulations.* 4. *Conformity by fisheries stakeholders.* *Monitoring and enforcement activities by Government regulatory*	*Technical assistance from CFRM available.*

SUMMARIES	VERIFIABLE INDICATORS	MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS
		agencies.	
Outputs:			
1. Plan of Action for implementing Seabob Management Strategy by June, 2008.	*Plan of Action produced.*	*Copies of Plan of Action circulated.* *Report and attendance from stakeholder workshop.*	*Full participation by sector agencies and stakeholders.* *Stakeholders support the implementation of a Plan of Action.*
2. Government approval of Management Strategy and Plan of Action by September, 2008.	*Management Strategy and Plan of Action presented to Minister of Agriculture and submitted to Cabinet for consideration.*	*Record of submission to the Minister.* *Copy of Cabinet decision on approval.*	*Political will by Government.* *Adequate resources allocated.*
3. Establish legal framework for the implementation of the Strategy by March, 2009.	*Regulations prepared and submitted to Minister of Agriculture.* *Regulations tabled in Parliament under the Fisheries Action.*	*Copy of Regulations.* *Regulations available to the public.*	
4. Implementation of Strategy beginning April, 2009.	*Monitoring and enforcement by regulatory agencies.* *Agreement and compliance by stakeholders in the industry.*	*Fishermen adhere to regulations.* *Records of patrols.* *Decision taken by the Guyana Association of Trawler Owners and Seafood Processors on closed season and supported by other fishermen.*	*Stakeholders support the implementation of a Plan of Action.*

SUMMARIES	VERIFIABLE INDICATORS	MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS
Activities:			
1. Plan of Action for implementing Seabob Management Strategy by June. 2008.			*Political will to make decisions for the effective management of coastal habitats and ecosystems.*
a. Conduct workshop to sensitise stakeholders on the sea bob Management Strategy.	*Wide cross-section of stakeholders participates in workshop.*	*Report from workshop.*	*Fisheries Stakeholders are able to make a consensus decision and stick to it*
b. Develop a Plan of Action for the implementation of the Strategy.	*Consultation and input from stakeholders into the development of Plan of Action.*	*Plan of Action prepared.*	*Political will translates into adequate technical and financial resources allocation to relevant institutions.*
2. Government approval of the Management Strategy and Plan of Action by September, 2008.			*Effective monitoring and enforcement measures are in place.*
a. Present Strategy to the Minister of Agriculture and Cabinet for approval.	*Minister presents Strategy to Cabinet for consideration and approval.*	*Cabinet written decision on approval of Strategy.*	
3. Establish legal framework for the implementation of the Strategy by March, 2009.			
a. Develop Terms of Reference for Legal Expert to prepare Regulations.	*Terms of Reference prepared.*	*Terms of Reference circulated for approval.*	
b. Recruit Legal Expert.			

SUMMARIES	VERIFIABLE INDICATORS	MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS
	Invite submission of proposals.		
c. Regulations prepared and discussed with stakeholders.		*Evaluation of proposal and selection of preferred candidate.*	
	Fora and meetings conducted with key stakeholders on regulations.		
d. Minister presents Regulations to Parliament under the Fisheries Act.		*Records of meetings and discussions.*	
	Parliament discussion and approval of Regulations.		
4. <u>Implementation of Strategy beginning by April, 2009.</u>		*Regulations available to the public.*	
a. Agreement and adherence among trawler owners and operators and medium-scale fishermen on closed season.	*Decision taken by the Guyana Association of Trawler Owners and Seafood Processors on closed season and supported by other fishermen.*	*Record of decision.*	
	Fishermen adhere to Regulations.		
b. Monitoring and enforcement by Coast Guard and Fisheries Division of Regulations.	*Fisheries Division and Coast Guard monitoring and enforcing Regulations.*	*Record of Compliance to Regulations*	
		Reduced number of violations.	
		Number of fishermen prosecuted.	
		Reports from monitoring exercises.	
		More resources allocated by Government for monitoring.	

7. THE WAY FORWARD

The objective of NBAP II is to continue on the foundation built during the implementation of NBAP and with focus on a thematic rather than programmatic approach. The Fuentes review of NBAP, as well as many stakeholders, was of the view that the extensive list of projects across Programme Areas for NBAP was too ambitious for a five-year period, especially for a country like Guyana with limited financial and technical resources. Despite this, EPA has been able to report that 90% of projects identified in NBAP have started or completed.

Despite bringing to focus long-term financing and sustainability, and identifying approaches and actions, the biggest challenge which faced NBAP was the EPA not being adequately supported by the institutional structure, and human and financial resources to effectively coordinate implementation. The EPA has prepared its Strategic Plan (2006-2010) which seeks to address these critical issues. Additionally, the Fuentes Report, as well as the National Strategy and Action Plan 2007-2011 *for Synergistic Environmental Capacity Development for Biodiversity, Climate Change and Land Degradation*, have outlined approaches which can facilitate efficient implementation of NBAP II. To facilitate the effective implementation of NBAP II, the following are recommended:

7.1 INSTITUTIONAL ARRANGEMENTS

1. EPA, as National Focal Point for coordinating and guiding the implementation of NBAP II, should assign a Coordinator and Monitor with responsibility for NBAP II.

2. EPA should review the approach and recommendations from NBAP on mobilising financial and technical assistance, and within the context of the Strategic Plan (2006-2010), identify potential sources of funding for projects under NBAP II, prepare proposals, and coordinate funding and other support for projects.

3. The National Biodiversity Committee (NBC) should be expanded to include private sector and NGO representation, in a similar way to the National Climate Committee, while, at the same time, take on a more coordinating role in the implementation of NBAP II and facilitate decision-making at the level of the Natural Resources Environment Advisory Committee (NREAC) if required. Recognising as well, the need to establish a statutory body for addressing biodiversity issues, NBC can be established in this capacity to function as the principal body which oversees and coordinate all aspects of UNCBD and biodiversity activities.

4. The EPA, taking the lead, and with support from NBAC and NREAC, should coordinate the NBAP II and UNCBD Work Programme activities for the four thematic areas among institutions with activities being incorporated into the Work Plans of sector institutions. At the same time, the interest and roles of national stakeholders should be recognised and their participation encouraged. Annex II elaborates the functions and responsibilities of key agencies as well as national stakeholders' interests and roles in biodiversity conservation.

7.2 MONITORING, EVALUATION AND REPORTING

NBAP outlined a comprehensive approach to monitoring, evaluation and reporting which should be maintained during the implementation of NBAP II. Continuous monitoring and evaluation of the implementation of NBAP II is required and a systematic monitoring framework for the implementation of NBAP II should be developed by the EPA to include quarterly and annual progress reports, assessment of achievements against indicators, and a mid-term review (2009) to guide any adjustments that may be required. Reports should be presented to the NBC for review to allow for wider stakeholder input and to guide resultant Annual Work Plans.

7.3 NEXT STEPS IN IMPLEMENTING NBAP II

The successful implementation of NBAP II will hinge on high level political support and commitment towards provision of resources, establishing a financial strategy, and a country-driven process with wide stakeholder ownership and participation. The following are next steps in the implementation of NBAP II:

1. Approval of NBAP II at the level of NREAC and/or Cabinet.
2. Establish a financing strategy for securing funds to implement NBAP II.
3. Establish the institutional arrangements for implementation to include Annual Work Programmes of EPA and key institutions.
4. Place priority on implementing actions which require little or no funding such as mechanisms for better coordination and collaboration among sector and other institutions.
5. Monitor, evaluate and report on implementation.

REFERENCES

(2005) *Draft Maritime Zones Bill, 2005*. Commonwealth Secretariat.

(2006) Ramsar Convention Manual, 4th Edition.

(2006) *The Caribbean Large Marine Ecosystem (CLME) Framework and the structure of the CLME Project.* Centre for Resource management and Environmental Studies (CERMES), UWI.

(May, 2003) *Summary Report of 2010 – The Global Biodiversity Challenge*. Published by the International Institute for Sustainable Development.

(June, 1992) *Convention on Biological Diversity*.

(July, 1996) Convention on Biological Diversity. *Subsidiary Body on Scientific, Technical and Technological Advice, Second Meeting. Practical Approaches for Capacity Building for Taxonomy*.

(December, 2002) Convention on Biological Diversity. *Report on the Open-ended Expert Workshop on Capacity-Building for Access to Genetic Resources and Benefit-Sharing*.

Axelrod, H. R. (1985) *Axelrod's Atlas of Freshwater Aquarium Fishes*, T.F.H. Publications, Inc. Ltd., 779p.

Caesar, J.C. (2001) *The integration of biodiversity into national environmental Assessment Procedures. National Case Study*. Prepared for the Biodiversity Planning support programme UNDP/UNEP/GEF.

Cummings, A. R. (2006) *Integrated and Sustainable Management of Transboundary water Resources in the Amazon River Basin*. Activity 1.1. Vision for the Basin and Transboundary Diagnostic Analysis, Final Report, National Vision Document.

EPA (2007) *National Capacity Self-Assessment in Guyana: Cross-cutting capacity issues* (unpublished report).

EPA (1997) National Strategy for the Conservation and Sustainable use of Guyana's Biodiversity.

EPA (1999) National Biodiversity Action Plan. *A Programme for Action by Stakeholders towards the Conservation and Sustainable Use of Biodiversity*, Guyana

EPA (November, 1999) *Final Draft – First National Report to the Conference of the Parties (COP) of the Convention on Biological Diversity*, Guyana.

EPA (2005) National Biodiversity Action Plan (1999 – 2004). *Review Report*. Guyana.

EPA (April, 2002) *Workshop on Development of a Prioritised Programme for Biodiversity Research in Guyana Implementing the NBAP Project No. 3:9*.

EPA (2006) *Indicators of Impacts on Forest Biodiversity Project*. State of Guyana's Forest at a Macro-level.

EPA (2000) *National Environmental Action Plan, 2001–2005*.

EPA (2000) *Integrated Coastal Zone Management Action Plan*.

EPA (2005) *Strategic Plan, 2006 –2010*.

FAO (2001) Fisheries Report No 651, *WCAFC Fourth Workshop on the assessment and management of shrimp and groundfish fisheries on the Brazil-Guianas Shelf, Cumana, Venezuela*, 2–13 October, 2000.

FAO (1997) *Technical Guidelines for Responsible Fisheries, 5, Aquaculture Development*, 40p.

FAO (1997) *Technical Guidelines for Responsible Fisheries, Inland Fisheries*, 35p.

FAO (1997) *Technical Guidelines for Responsible Fisheries Integration of Fisheries into Coastal Area Management,* 17p.

FAO (1995) *Code of Conduct for Responsible Fisheries*, 41p.

FAO (1993) *Field Guide to Commercial Marine and Brackish Water resources of the North East Coast of South America,* 513p.

Fisheries Department (2006) *Draft Fisheries Management Plan*.

Fuentes, E. (December, 2004*) Review of Guyana's National Biodiversity Action Plan (1999–2004).*

Fuentes, E. (2005) *National Biodiversity Action Plan, 1999-2004.* Review Report.

GOG (2002) *Management Plan for Arapaima (Arparima gigas) in North Rupununi, Guyana*. A Pilot Project under the Fisheries Act (2002).

GOG (2000) *Integrated Coastal Zone Management Action Plan*, 31p.

GOG (1997) *Draft National Development Strategy Document of 1997.*

GOG (2001) *Guyana Poverty Reduction Strategy Paper*.

GFC (1998) *National Forest Plan* – Draft. GFC.

GFC (2002) *Overview of Progress in Guyana towards ensuring sustainable production of tropical timber.*

GFC (2002-2006). *Market Reports.*

GFC (2005). *Forestry in Guyana.*

Henderson and Galeano (1996) **in** T.R. van Andel, K.C.A. Bröker and P.E. Huyskens (1998) *Palm heart harvesting in Guyana's North West district. Exploitation and regeneration of swamp forests*. Tropenbos – Guyana Interim Report 98-1. Utrecht University.

Institute of Marine Research, Bergen. (1998) *Survey of the Fish Resources in the shelf areas between Suriname and Columbia,* 138p.

Pastakia, C. M. (1991). *A Preliminary Study of the Mangroves of Guyana*. Article B 946/89, No. 8912. Aquatic Biological Consultancy Services Limited.

Ramdass, I. (2004) *Report on the First Meeting of the Conference of the Parties (CoP/MoP-1) to the Convention on Biological Diversity Serving as the Meeting of the Parties to the Cartagena Protocol on Biosafety,* held in Kuala Lumpur, Malaysia, 23-27 February, 2004.

Strudwick, (1990) **in** T.R. van Andel, K.C.A. Bröker and P.E. Huyskens (1998) *Palm heart harvesting in Guyana's North West district. Exploitation and regeneration of swamp forests*. Tropenbos – Guyana Interim Report 98-1. Utrecht University.

ter Steege, H. (2000) *The Use of National Forest Inventory Data for a Protected Area Strategy in Guyana*. In: "Plant Diversity in Guyana with recommendations for a National Protected Area Strategy", *Tropenbos Series 18.*

UNCBD (June 2006) *Final Stocktaking and Thematic Assessment Report*.

UNEP/CBD/COP/7/21. Annex: *Decisions Adopted by the Conference of the Parties to the Convention on Biological Diversity at its Seventh Meeting.*

UNDP (n.d.) *Synergies in National Implementation, The Rio Agreements.*

Unpublished Document. (2006) *Preparatory Study on the Project Formulation for Fisheries and Aquaculture development and management in the Caribbean*, 10p.

van Andel.T. R. (2000) *Non-Timber Forest Product of Northwest District of Guyana*, Part I, Tropenbos. Guyana.

Van Andel, T. R., Bröker, K.C.A. and Huyskens, P.E. (1998) *Palm heart harvesting in Guyana's North West district. Exploitation and regeneration of swamp forests*. Tropenbos – Guyana Interim Report 98-1. Utrecht University.

Vermeulen, S. and Koziell, I. (2002) IIED National Resource Issues Paper – *Integrating Global and Local Values: A Review of Biodiversity Assessment*.

Web Sites

http://www.guysuco.com
http://www.agrinetguyana.org.gy
http://www.biodiv.org
http://www.agriculture.gov.gy
http://www.iwokrama.org

ANNEX I. NATIONAL STAKEHOLDERS, THEIR INTERESTS AND ROLES IN BIODIVERSITY

Name of Institution	Interest and Role regarding Biodiversity
Environmental Protection Agency	Take measures necessary for effective protection and management of the natural environment, coordination of conservation programmes, sustainable use of resources, assessment of the impact of development activities on the environment and the integration of appropriate environmental provisions into development planning. Establish, coordinate and maintain a framework for the sustainable use and conservation of biodiversity; coordinate the establishment of a National System of Protected Areas and serve as the focal point for the Convention on Biological Diversity.
National Agricultural Research Institute	Undertake agricultural research with a major focus on the collection and maintenance of plant and some animal genetic resources and materials. Focus on agricultural biodiversity as it relates to food crops and plant protection.
Guyana Forestry Commission	Promote sustainable forestry practices; develop and implement forest Code of Practice to effectively monitor forestry concessions; promote initiative towards forest certification and maintenance of forest biodiversity.
Iwokrama	Promote sustainable management and use of tropical forests and their resources; conservation and utilization of biodiversity; sustainable human development; forestry research and information and communication.
Centre for the Study of Biological Diversity	Study, document and offer museum and herbarium services for the conservation of biodiversity. Provide taxonomic service to biodiversity researchers. Advocate for conservation initiatives.
Conservation International (Guyana)	Promote action towards conservation and management of biodiversity. Public awareness, support and advocate action on management and conservation of biodiversity. Support for biodiversity research.
WWF (Guyana)	Promote action towards conservation and management of biodiversity. Public awareness, support and advocate action on management and conservation of biodiversity. Support for biodiversity research.
Guyana Marine Turtle Conservation Society	Provide support and advocate action for the conservation and protection of marine turtles, their habitats and contiguous areas and resources.
Academic Institutions	Conduct training, research, public awareness programmes to support the conservation of biodiversity. Provide scientific data on biodiversity resources.
Guyana Geology and Mines Commission	The Guyana Geology and Mines Commission's (GGMC) Role is to act as a development change agent in the diversification of the economic base of Guyana through its activities in the mineral sector and in so doing create the opportunities for rapid economic development which an expanding mineral sector is ideally suited to provide. The GGMC also is expected to regulate on behalf of the government all activities in the mineral sector. The role of the Environmental Research and Development Department (ERDD) of the GGMC is the coordination, promotion and overseeing the

Name of Institution	Interest and Role regarding Biodiversity
	implementation of efficient mineral processing and environmentally sound mining techniques across the entire spectrum of the mineral industry. The principal functions of the Environmental Research and Development Department include development of environmental regulations, procedures, standards, and guidelines to promote sound environmental management in all phases of the mineral industry; development and review of environmental monitoring programmes, management plans, emergency response and contingency plans and mine site rehabilitation programmes; collection of all relevant environmental data; promote public awareness about environmental concerns and matters affecting the mining industry and to encourage public participation in environmental management of the mining industry with respect to planning policies and both long- and short-term strategies.
GuySuCo	Undertake agricultural research with a major focus on the collection and maintenance of genetic resources for sugar cane. Focus on agricultural biodiversity as it relates to sugar cane cultivation.
Ministry of Agriculture	The Mission of the Ministry of Agriculture is to ensure the formulation and implementation of policies and programmes which facilitate the development of agriculture and fisheries in Guyana, thereby contributing to the enhancement of rural life, the sustained improvement of incomes of producers and other participants in the agricultural production and marketing chain; and the maintenance of a sound physical and institutional environment for present and future productive activities.
Media Operations	Be conversant with issues surrounding biodiversity conservation and management to enable them to collect, analyze and disseminate information on biodiversity issues and the management and conservation of biodiversity. Contribute to the improvement of public awareness on biodiversity issues.
General Public	Take action at the local and other levels to conserve and use biodiversity wisely. Support various actions that promote the wise use, management and conservation of biodiversity.
Non-Governmental Organizations	Promote actions towards conservation and use of biodiversity. Support actions to promote wise use of biodiversity, conservation and improvement of public awareness.
Regional and Local Administrative Authorities	Be involved in the maintenance, use and conservation of biodiversity resources. Planning and promotion of public awareness initiatives for biodiversity management and conservation.
Funding Agencies	Provide financial and technical support for research, conservation and management and sustainable use of biodiversity.
Private Sector Agencies	Utilization of biodiversity resources. Implement conservation and sustainable use initiatives for research and planning for use of biodiversity. Support NBAP to achieve its objectives.

ANNEX II. FOUR THEMATIC AREAS WORK PROGRAMME

ANNEX II-A. GUYANA'S PROGRESS ON THE UNCBD FOREST BIODIVERSITY WORK PROGRAMME.

Programme Element	Goal	Operational Objectives	Guyana's Progress
CONSERVATION, SUSTAINABLE USE AND BENEFIT-SHARING.	**To apply the ecosystem approach to the management of all types of forests.**	*Develop practical methods, guidelines, indicators and strategies to apply the ecosystem approach adapted to regional differences to forests both inside and outside protected forest areas as well as both in managed and unmanaged forests.*	• Iwokrama zoned its forest into Wilderness Preserve and Sustainable Utilization Area. • Iwokrama Forest Management Plan adopts the ecosystem approach. • Iwokrama Road Management Plan takes a holistic approach to land-use planning.
	To reduce the threats and mitigate the impacts of threatening processes on forest biological diversity	*Prevent the introduction of invasive alien species that threaten ecosystems, and mitigate their negative impacts on forest biological diversity in accordance with international law.*	• Iwokrama addressed invasive species in its EIA, and Companies pursuing FSC certification are required to do so.
		Mitigate the impact of pollution such as acidification and eutrophication on forest biodiversity.	• EIAs required by new forest companies and by existing companies pursuing certification address issues of pollution (especially hydrocarbons and effects on freshwater). • Iwokrama airstrip environmental management plan addresses pollution.
		Mitigate the negative impacts of climate change on forest biodiversity.	• Work on carbon storage done by Iwokrama. • Iwokrama business plan proposes that Iwokrama play a key role on issues of climate change. • Establishment of 80,000 ha Conservation Concession by CI-G and promotion of carbon credit scheme for Guyana. • Possibility of setting aside forest area for gaining carbon credits is being investigated.
		To prevent and mitigate the adverse effects of forest fires and fire suppression.	• Workshop on threats to biodiversity and documentary on the proposed 800,000 ha Kanuku Mountains Protected Area. • Iwokrama has a Fire Management Plan and fire management must be addressed in EIAs.
		To mitigate effects of the loss of natural disturbances necessary to maintain biodiversity in regions where these no longer occur.	• No specific work in this area.
		To prevent and mitigate losses due to fragmentation and conversion to other land uses.	• Proposed development of biodiversity corridor from the Roraima/North Pakaraimas to Southern Guyana through Iwokrama Forests, Kanuku Mountains and the CI-G's Conservation Concession. • ~~Logging agreements on state land prevent (except in specified "conversion areas") conversion to~~ other land uses. • COP guidelines, such as those relating to roads, aim to prevent excessive fragmentation.

Programme Element	Goal	Operational Objectives	Guyana's Progress
			• Pilot land-use plans have been developed by GLSC. • Informal discussions between mining and forestry agencies to harmonise respective activities are underway.
	To protect, recover and restore forest biological diversity.	*Restore forest biological diversity in degraded secondary forests and in forests established on former forest lands and other landscapes, including in plantations.*	• GFC has conducted studies on degraded white sand wallaba forests. • UG and NARI have conducted some research on rehabilitation of former bauxite mines.
		Promote forest management practices that further the conservation of endemic and threatened species.	• CIG shared information on timber inventories and rapid biological surveys in pristine forests with the GoG. • High Conservation Value Forest Workshop (GFC/GNIFC 2005). • GFC's Code of Practice promotes best practice (including RIL) that, *inter alia*, reduces negative impacts on biodiversity.
		Ensure adequate and effective protected forest area networks.	• CIG provided financial support for the setting up of the national protected areas trust fund. • Iwokrama undertakes monitoring of roads, forest and river and networks with other agencies. • WWF have developed a Biodiversity Conservation Vision for the Guianas which is based in part on an assessment of endemic and threatened forest species.
	To promote the sustainable use of forest biological diversity.	*Promote sustainable use of forest resources to enhance the conservation of forest biological diversity.*	• CIG involved in development of community-based conservation enterprises in Region #9. • WWF- and Profor-funded FSC certification support to projects (BCL, GNIFC, Iwokrama, Variety Woods). • GFC is the national focal point for development of criteria and indicators under the Tarapoto agreement. • UG-hosted workshop in 2001 on biodiversity in forest concession areas.
		Prevent losses caused by unsustainable harvesting of timber and non-timber forest resources.	• Several companies pursuing FSC certification. • Barama Company FSC certified (though currently suspended). • Forest certification in process. • Reduced Impact Logging prescribed by the GFC CoP. • GFC worked on ite palm, manicole and mangrove management and produced CoPs.
		Enable indigenous and local communities to develop and implement adaptive community-management systems to conserve and sustainably use forest biological diversity.	• Iwokrama has entered into Collaborative Management Agreements. • Iwokrama supports community-based projects, e.g. aquarium fish trade, arapaima management plan, honey project, etc. • GMTCS developing a crabwood management plan. • CI-G involved in development of management plan for the 625,000 ha Wai Wai community owned conservation area in Konashen District, Southern Guyana, using fully participatory approaches. • UNDP/GFC worked on a community training project that developed forest management capacity in the communities. • KfW-funded small grants project promoting local initiatives in support of conservation.

Programme Element	Goal	Operational Objectives	Guyana's Progress
		Develop effective and equitable information systems and strategies and promote implementation of those strategies for in situ and ex situ conservation and sustainable use of forest genetic diversity, and support countries in their implementation and monitoring.	• No specific work in this area.
	Access and benefit-sharing of forest genetic resources.	*Promote the fair and equitable sharing of benefits resulting from the utilization of forest genetic resources and associated traditional knowledge.*	• Iwokrama has a Co-Management Agreement with Fair View in its logging enterprise. • Iwokrama has a Collaborative Management Agreement with NRDDB.
INSTITUTIONAL AND SOCIO-ECONOMIC ENABLING ENVIRONMENT.	**Enhance the institutional enabling environment.**	*Improve the understanding of the various causes of forest biological diversity losses.*	• Through research done, attending workshops, meetings, etc. • EPA's macro- and micro-level forest biological diversity indicator projects (IDB and WWF-funded 2006-2007).
		Parties, Governments and organizations to integrate biological diversity conservation and sustainable use into forest and other sector policies and programmes.	• Iwokrama and others involved in consultations, workshops, etc., relating to these issues. • Biodiversity conservation and sustainable use central to the mandate of GFC.
		Parties and Governments to develop good governance practices, review and revise and implement forest and forest-related laws, tenure and planning systems, to provide a sound basis for conservation and sustainable use of forest biological diversity.	• New forest legislation in draft stage.
		Promote forest law enforcement and address related trade.	• World Bank-funded report on law compliance in the forest sector (2006). • Audit of log-tracking system by Profor (GFC 2006). • Development of national legal verification system (GFC 2006-7).
	Address socio-economic failures and distortions that lead to decisions that result in loss of forest biological diversity.	*Mitigate the economic failures and distortions that lead to decisions that result in loss of forest biological diversity.*	• Key agreements with community stakeholders (NRDDB) which include benefit- sharing and collaborative management issues. • Project to investigate the technical and socio-economic assessment of chainsaw and mobile sawmill use (FAO/FRP).
	Increase public education, participation, and awareness.	*Increase public support and understanding of the value of forest biological diversity and its goods and services at all levels.*	• Iwokrama involved in public awareness through exhibitions, outreach to schools (Georgetown and Communities associated to Iwokrama forest), Friends of Iwokrama, Seminars, etc. • Holding of public events by CI-G to share results of rapid biological assessments in Kanuku Mountains and Southern Guyana. • Wildlife Clubs support by Iwokrama. • Environmental Clubs support by EPA.
KNOWLEDGE,	**To characterize and to analyse from forest ecosystem to global**	*Review and adopt a harmonized global to regional forest classification system, based on*	• No specific work in this area.

Programme Element	Goal	Operational Objectives	Guyana's Progress
		harmonized and accepted forest definitions and addressing key forest biological diversity elements.	
	scale and develop general classification of forests on various scales in order to improve the assessment of status and trends of forest biological diversity.	*Develop national forest classification systems and maps (using agreed international standards and protocols to enable regional and global synthesis).*	• DFID support for inventory and national forest map.
		To develop, where appropriate, specific forest ecosystems surveys in priority areas for conservation and sustainable use of forest biodiversity.	• Iwokrama has developed monitoring protocols for forest, road and river and further integrated monitoring protocol under development (to include social aspects).
ASSESSMENT AND MONITORING.	**Improve knowledge on and methods for the assessment of the status and trends of forest biological diversity, based on available information.**	*Advance the development and implementation of international, regional and national criteria and indicators based on key regional, subregional and national measures within the framework of sustainable forest management.*	• GNIFC led the development of a draft national standard (though not yet endorsed by FSC). • GFC led the development of National criteria and indicators under the Tarapoto Agreement.
	Improve understanding of the role of forest biodiversity and ecosystem functioning.	*Conduct key research programmes on the role of forest biodiversity and ecosystem functioning.*	• Trobenbos undertook fundamental research on forest ecology and biodiversity until 2001. • CI-G conducted Rapid Biological Assessments in the Kanuku Mountains and Southern Guyana. • Floristic survey undertaken in the CI-G Conservation Concession. • Iwokrama research plan under development.
	Improve the infrastructure for data and information management for accurate assessment and monitoring of global forest biological diversity.	*Enhance and improve the technical capacity at the national level to monitor forest biological diversity, benefiting from the opportunities offered through the clearing-house mechanism, and to develop associated databases as required on a global scale.*	• EPA, GFC, UG and Iwokrama offer library facilities. • CI-G provided funding to the University of Guyana to develop the Jenman herbarium database. • GINRIS coordinates all GIS data in the natural sources sector including forestry. • FTCI, UG, GSA all involved in forestry training and education. • DFID supported training in the sector through development of curricula, manuals and in-house trainers.

ANNEX II-B. GUYANA'S PROGRESS ON THE UNCBD AGRICULTURE BIODIVERSITY WORK PROGRAMME.

Programme Element	Operational Objective	Activities	Guyana's Progress
ASSESSMENT.	**To provide a comprehensive analysis of status and trends of the world's agricultural biodiversity and of their underlying causes (including a focus on the goods and services agricultural biodiversity provides), as well of local knowledge of its management.**	*1.1. Support the ongoing or planned assessments of different components of agricultural biodiversity, for example, the reports on the state of the world's plant genetic resources for food and agriculture, and the state of the world's animal genetic resources for food and agriculture, as well as other relevant reports and assessments by FAO and other organizations, elaborated in a country-driven manner through consultative processes.*	▪ Guyana, in May 1995, prepared and submitted its Country Report to the FAO International Technical Conference on Plant Genetic Resources, Leipzig, 1996. Efforts are currently underway by NARI to update this report through work coordinated by its Plant Genetic Resources Department. ▪ In 2006, with assistance from FAO, NARI coordinated the completion of the Country Report on Animal Genetic Resources. This effort involved an Inter-Agency team.
		1.2. Promote and develop specific assessments of additional components of agricultural biodiversity that provide ecological services, drawing upon the outputs of programme element 2. This might include targeted assessments on priority areas (for example, loss of pollinators, pest management and nutrient cycling).	▪ There are a few publications such as *'Common weeds of Guyana'* and *'Agricultural Insects of Guyana'* available through NARI. However, there has been no specific assessment done on agriculture biodiversity and their role in providing ecological services.
		1.3. Carry out an assessment of the knowledge, innovations and practices of farmers and indigenous and local communities in sustaining agricultural biodiversity and agro-ecosystem services for and in support of food production and food security.	▪ IICA, CARDI, NARI have done some work with indigenous communities in agro-forestry and integrated pest management as outlined in Section 5.5. There has been no formal assessment done though there is some institutional knowledge within the Ministry of Agriculture Hinterland Coordinator and Extension Services personnel, though not documented.
		1.4. Promote and develop assessments of the interactions between agricultural practices and the conservation and sustainable use of the components of biodiversity referred to in Annex I to the Convention.	▪ No assessment done to date though GUYSUCO has developed a proposal to research biodiversity within the sugar cane ecosystem. ▪ No initiatives to date through there are efforts underway organize and share information on agriculture.
		1.5. Develop methods and techniques for assessing and monitoring the status and trends of agricultural biodiversity and other components of biodiversity in agricultural ecosystems, including:	
		(a) Criteria and guidelines for developing indicators to facilitate monitoring and assessment of the status and trends of biodiversity in different production systems and environments, and the impacts of various practices, building wherever possible on existing work, in accordance with decision V/7, on the development of indicators on biological diversity, in accordance to the particular characteristics and	▪ No initiatives to date.

Programme Element	Operational Objective	Activities	Guyana's Progress
		needs of Parties; *(b) An agreed terminology and classification for agro-ecosystems and production systems to facilitate the comparison and synthesis of various assessments and monitoring of different components of biodiversity in agricultural ecosystems, at all levels and scales, between countries, and regional and international partner organizations;* *(c) Data and information exchange on agricultural biodiversity (including available information on ex situ collections) in particular through the clearing-house mechanism under the Convention on Biological Diversity, building on existing networks, databases, and information systems;* *(d) Methodology for analysis of the trends of agricultural biodiversity and its underlying causes, including socio-economic causes.*	▪ No initiatives to date. ▪ While not specifically focused on agricultural biodiversity, there are a number of initiatives to organize and share agriculture information. NARI is preparing a database for farmers on crops and practices. The Pesticide Board is preparing a database on Pesticides, their safe use and impacts while the EPA is working on a National Biodiversity Information Service to share information on biodiversity research. ▪ No initiatives to date.
ADAPTIVE MANAGEMENT.	**To identify management practices, technologies and policies that promote the positive and mitigate the negative impacts of agriculture on biodiversity, and enhance productivity and the capacity to sustain livelihoods, by expanding knowledge, understanding and awareness of the multiple goods and services provided by the different levels and functions of agricultural biodiversity.** **There are large and fairly well-defined research agendas for genetic resources for food and agriculture. These include the development of complementary conservation and use strategies, and a focus on developing the conservation and use of under-utilized species. There are also an increasing number of case-studies on, for example, farm and *in situ* conservation of genetic resources, and community integrated pest management. However, far more understanding is**	*2.1. Carry out a series of case-studies, in a range of environments and production systems, and in each region:* *(a) To identify key goods and services provided by agricultural biodiversity, needs for the conservation and sustainable use of components of this biological diversity in agricultural ecosystems, and threats to such diversity;* *(b) To identify best management practices; and* *(c) To monitor and assess the actual and potential impacts of existing and new agricultural technologies.* *This activity would address the multiple goods and services provided by the different levels and functions of agricultural biodiversity and the interaction between its various components, as set out in the appendix hereto with a focus on certain specific and cross-cutting issues, such as:* *(a) The role and potential of wild, under-utilized and neglected species, varieties and breeds, and*	▪ No case studies have been undertaken though there are initiatives to look at these aspects. ▪ No initiatives to date. ▪ No initiatives to date. ▪ No initiatives to date. ▪ Some work has been done by IICA and NARI in this area through agro-forestry and integrated pest management efforts as outlined in Table 5.

Programme Element	Operational Objective	Activities	Guyana's Progress
	needed of the multiple goods and services provided by the different levels and functions of agricultural biodiversity. Much more research is needed, for example, to examine the relationship between diversity, resilience and production in agro-ecosystems. **A blend of traditional and newer practices and technologies is used in agriculture, which utilize, or impact on, agricultural biodiversity in different ways, with particular consequences for biological diversity and for the sustainability and productivity of agricultural systems. A better understanding and application of these complex interactions could help to optimize the management of agricultural biodiversity in production systems. Such work is essential in order to meet the objectives of decision III/11 of the Conference of the Parties to promote the positive and mitigate the negative impacts of agriculture on biological diversity, and enhance productivity and capacity to sustain livelihoods.**	*products;* *(b) The role of genetic diversity in providing resilience, reducing vulnerability, and enhancing adaptability of production systems to changing environments and needs;* *(c) The synergies and interactions between different components of agricultural biodiversity;* *(d) The role of pollinators, with particular reference to their economic benefits, and the effects of introduced species on indigenous pollinators and other aspects of biological diversity;* *(e) The role of soil and other below-ground biodiversity in supporting agricultural production systems, especially in nutrient cycling;* *(f) Pest and disease control mechanisms, including the role of natural enemies and other organisms at field and landscape levels, host plant resistance, and implications for agro-ecosystem management;* *(g) The wider ecosystem services provided by agricultural biodiversity;* *(h) The role of different temporal and spatial patterns in mosaics of land use, including complexes of different habitats;* *(i) Possibilities of integrated landscape management as a means for the conservation and sustainable use of biodiversity.* *2.2. Identify and promote the dissemination of information on cost-effective practices and technologies, and related policy and incentive measures that enhance the positive and mitigate the negative impacts of agriculture on biological diversity, productivity and capacity to sustain livelihoods, through:* *(a) Comprehensive analyses in selected production systems of the costs and benefits of alternative management practices as identified from activity 2.1, and the valuation of the goods and services provided by agricultural biodiversity;*	▪ NARI has on-going research on soil. ▪ Some work has been done by IICA and NARI in this area through agro-forestry and integrated pest management efforts as outlined in Table 5. ▪ No initiatives to date. ▪ No initiatives to date. ▪ No initiatives to date.

Programme Element	Operational Objective	Activities	Guyana's Progress
		(b) Comprehensive analyses of the impacts of agricultural production, including their intensification and extensification, on the environment and identification of ways to mitigate negative and promote positive impacts; *(c) Identification, at international and national levels, in close collaboration with relevant international organizations, of appropriate marketing and trade policies, legal and economic measures which may support beneficial practices:* *(i) Promotion of neglected and under-utilized species, varieties and breeds;* *(ii) Promotion of local and indigenous knowledge;* *(iii) Measures to add value to products of production systems that sustain biodiversity, and to diversify market opportunities;* *(iv) Access and benefit-sharing measures and intellectual property issues;* *(v) Economically and socially sound measures that act as incentives, in accordance with Article 11 and consistent with Article 22; and* *(vi) Training and capacity-building in support of the above.* *2.3. Promote methods of sustainable agriculture that employ management practices, technologies and policies that promote the positive and mitigate the negative impacts of agriculture on biodiversity, with particular focus on the needs of farmers and indigenous and local communities.*	▪ No initiative to date. ▪ No initiative to date. ▪ Guyana's approach to agriculture is hinged on these principles. Work is ongoing with perhaps more having been done for specific crops such as sugar and rice.
CAPACITY BUILDING.	**To strengthen the capacities of farmers, indigenous and local communities, and their organizations and other stakeholders, to manage sustainably agricultural biodiversity so as to increase their benefits, and to promote awareness and responsible**	*3.1. Promote enhanced capabilities to manage agricultural biodiversity by promoting partnerships among researchers, extension workers and farmers in research and development programmes for biological diversity conservation and sustainable use of biological diversity in agriculture. To achieve this, countries should be encouraged to set up and maintain, inter alia, local-level forums for farmers,*	▪ The agriculture extension services programme in Guyana is being strengthened as well as to have more focused research to assist farmers.

Programme Element	Operational Objective	Activities	Guyana's Progress
	action	*including indigenous farmers using traditional knowledge, researchers, extension workers and other stakeholders to evolve genuine partnerships, including training and education programmes.* *3.2. Enhance the capacity of indigenous and local communities for the development of strategies and methodologies for in situ conservation, sustainable use and management of agricultural biological diversity, building on indigenous knowledge systems.* *3.3. Provide opportunities for farmers and local communities, and other stakeholder groups, to participate in the development and implementation of national strategies, plans and programmes for agricultural biodiversity, through decentralized policies and plans, and local government structures.* *3.4. Identify and promote possible improvements in the policy environment, including benefit-sharing arrangements and incentive measures, to support local-level management of agricultural biodiversity.* *3.5. Promote awareness about the value of agricultural biodiversity and the multiple goods and services provided by its different levels and functions, for sustainable productivity amongst producer organizations, agricultural cooperatives and enterprises, and consumers, with a view to promoting responsible practices* *3.6. Promote networks of farmers and farmers' organizations at regional level for exchange of information and experiences.*	▪ While there is no overall programme for indigenous communities, NARI and IICA in Guyana have undertaken initiatives in selected regions with communities in the area of agro-forestry, organic cocoa, organic pineapples. There is also work being done through the Agriculture Extension Services and Hinterland Coordinator of the Ministry to develop a Hinterland Agriculture Programme. ▪ Guyana's National Development Strategy, which has a comprehensive section on Agriculture was developed with extensive stakeholder involvement. Recently there has been wide stakeholder input to develop a strategy for agricultural diversification. ▪ While there is no specific initiative, the awareness is inherent in the approach to sustainable agriculture development in Guyana ▪ While there is no specific network for information sharing, this is done through the regional system of agriculture extension offices who are in constant contact with farmers, farmer representative organizations in the various productive sectors (rice, sugar, non-traditional agriculture) and through the Regional Democratic System ▪ No initiatives to date.
MAINSTREAM-ING.	**To support the development of national plans or strategies for the conservation and sustainable use of agricultural biodiversity and to promote their mainstreaming and integration in sectoral and cross-sectoral plans and programmes.**	*4.1. Support the institutional framework and policy and planning mechanisms for the mainstreaming of agricultural biodiversity in agricultural strategies and action plans, and its integration into wider strategies and plans for biological diversity, through:* *(a) Support for relevant institutions in the conduct of assessments on the status and trends of agricultural biodiversity within the context of ongoing biodiversity and sectoral assessments;*	▪ No initiatives to date.

Programme Element	Operational Objective	Activities	Guyana's Progress
		(b) Development of policy and planning guidelines, and training materials, and support for capacity-building initiatives at policy, technical and local levels in agricultural and environmental forums for the development, implementation, monitoring and evaluation of policies, programmes and actions for the conservation and sustainable use of agricultural biodiversity; and	▪ With donor support, a number of projects are ongoing in both the environment and agricultural sectors to build capacity. An overview is provided on http://www.agrinetguyana.org.gy/projects/index.htm
		(c) Improved consultation, coordination, and information-sharing within countries among respective focal points and lead institutions, relevant technical committees and coordinating bodies, to promote synergy in the implementation of agreed plans of action and between ongoing assessments and intergovernmental processes.	▪ Guyana is part of the regional network within CARICOM.
		4.2. Support the development or adaptation of relevant systems of information, early warning and communication to enable effective assessment of the state of agricultural biodiversity and threats to it, in support of national strategies and action plans, and of appropriate response mechanisms.	▪ No action to date.
		4.3. Promote public awareness of the goods and services provided by agricultural biological diversity, and the value and importance of such diversity for agriculture and for society in general.	
		4.4. Promote ongoing and planned activities for the conservation, on farm, in situ, and ex situ, in particular, in the countries of origin, of the variability of genetic resources for food and agriculture, including their wild relatives.	▪ Some work being done by NARI.
			▪ Some work being done by NARI.

ANNEX II-C. GUYANA'S PROGRESS ON THE UNCBD COASTAL BIODIVERSITY WORK PROGRAMME.

Goal	Operational Objective	Activities	Guyana's Progress
Programme Element **IMPLEMENTATION OF INTEGRATED MARINE AND COASTAL AREA MANAGEMENT**			
TO PROMOTE AND IMPROVE THE IMPLEMENTATION OF IMCAM AT THE LOCAL, NATIONAL AND REGIONAL LEVEL.	**To apply appropriate policy instruments and strategies, including building of capacity, for effective implementation of Integrated Marine and Coastal Area Management (IMCAM).**	*a. Promote, within the framework of IMCAM, the integration of biological diversity concerns in all socio-economic sectors adversely impacting the marine and coastal environment.* *b. Promote the application of ecosystem based management, including through integration of coastal management activities and watershed management.* *c. Identify the obstacles to the implementation of IMCAM nationally and regionally, and develop and implement strategies, such as partnerships, tools and other means, to overcome those obstacles, including provision of guidance on the application of such tools.* *d. Encourage the application of the ecosystem approach, promote integrated multidisciplinary and multisectoral coastal and ocean management at the national level, and encourage States in developing ocean policies and mechanisms on integrated coastal management.* *e. Promote the identification or establishment of national and where appropriate regional processes for developing advice on the application of IMCAM and issues identified under the operational objective.* *f. Assist the development of national and regional capacity building.*	▪ ICZM Action plan developed. ▪ ICZM Committee functions through EPA as advisory group on ICZM matters. ▪ Biodiversity assessment is a part of EIA processes. ▪ ICZM Action plan developed. ▪ ICZM Committee functions through EPA as advisory group on ICZM matters. ▪ Biodiversity assessment is a part of EIA processes. ▪ FFI training and capacity building for GPAS. ▪ GMTCS stakeholder consultations and training at Shell Beach. ▪ Collaboration with overseas scientists and researchers to identify issues and propose recommended mitigation measures. ▪ Involvement of conservation and research institutions in data collection and stakeholder consultations. ▪ ICZM Action plan developed. ▪ ICZM Committee functions through EPA as advisory group on ICZM matters. ▪ Biodiversity assessment is a part of EIA processes. ▪ No known initiative

Goal	Operational Objective	Activities	Guyana's Progress
		g. Provide information on relevant legal and institutional issues, having regard to the United Nations Convention on the Law of the Sea (UNCLOS) and other related international and regional agreements.	▪ FFI training and capacity building for GPAS. ▪ GMTCS stakeholder consultations and training at Shell Beach. ▪ Collaboration with overseas scientists and researchers to identify issues and propose recommended mitigation measures. ▪ Involvement of conservation and research institutions in data collection and stakeholder consultations.
		h. Assist the development of appropriate education and public awareness programmes at all levels	▪ No known initiative.
		i. Provide guidance on maintenance and wider application of local and traditional knowledge.	▪ EPA's Education, Information and Training Division produces and promoted education and awareness programmes.
		j. Cooperate with and build upon the Large Marine Ecosystem (LME) concept, as well as specific LME projects that are ongoing or planned.	▪ No known initiative.
			No known initiative.
	To undertake direct action to protect the marine environment from negative impacts.	*(a) To promote adequate protection of areas important for reproduction such as spawning and nursery areas and restoration of such areas and other important habitats for marine living resources.*	▪ No known initiative.
		(b) To promote action to reduce and control sea-based sources of pollution.	▪ No known initiative.
		(c) To achieve substantial progress in protecting the marine environment from land-based activities through effective application of the Global Programme of Action for the Protection of the Marine Environment from Land-based Activities and other appropriate instruments, including proper coastal land use, watershed planning, and integration of integrated marine and coastal area management into key sectors.	▪ No known initiative.

Goal	Operational Objective	Activities	Guyana's Progress
		(d) To promote urgent and special attention and measures in respect to closed and semi-closed seas. *(e) To take measures to reduce by-catch.*	▪ No known initiative. ▪ TEDs are mandatory in fishing vessels especially with respect to trawlers to prevent harm and injury to marine turtles.
	To develop guidelines for ecosystem evaluation and assessment, paying attention to the need to identify and select indicators, including social and abiotic indicators that distinguish between natural and human-induced effects.	*(a) To promote the development of sets of national indicators on which to base decision-making; and convene regional workshops to help select key indicators.* *(b) To identify existing organizations and initiatives.* *(c) To promote the identification of key habitats for marine living resources on a regional basis, with a view to further develop policies for action to prevent physical alteration and destruction of these habitats, and pursue restoration of degraded habitats, including, inter alia, coral reef systems.* *(d) To promote the establishment or strengthening of mechanisms for research, monitoring and assessment of marine and coastal ecosystems and their living resources.* *(e) To promote exchange of information and experience using the clearing house mechanism and other appropriate mechanisms.* *(f) To collaborate with relevant organizations in the preparation of guidelines.* *(g) To facilitate the establishment of a regular process under the United Nations for global reporting and assessment of the state of the marine environment, including socio-economic aspects, both current and*	▪ No known initiatives. ▪ No known initiatives. ▪ EPA serves as coordinating and clearing house mechanism for all biodiversity related research. ▪ EPA serves as coordinating and clearing house mechanism for all biodiversity related research. ▪ No known initiative. ▪ EPA serves as coordinating and clearing house mechanism for all biodiversity-related research. ▪ No known initiative.

Goal	Operational Objective	Activities	Guyana's Progress
		foreseeable, building on existing regional assessments.	
Programme Element **MARINE AND COASTAL LIVING RESOURCES**			
TO ENSURE THE CONSERVATION AND SUSTAINABLE USE OF MARINE AND COASTAL LIVING RESOURCES.	**To promote ecosystem approaches to the conservation and sustainable use of marine and coastal living resources, including the identification of key variables or interactions, for the purpose of assessing and monitoring, first, components of biological diversity; second, the sustainable use of such components; and, third, ecosystem effects.**	*(a) To develop collaborative links with relevant organizations and institutions, including in regards to cooperative activities aimed at protecting biodiversity in marine areas beyond national jurisdiction.*	▪ EPA serves as coordinating and clearing house mechanism for all biodiversity-related research.
		(b) To promote the exchange of information and experience using appropriate mechanisms.	▪ EPA serves as coordinating and clearing house mechanism for all biodiversity related research.
		(c) To promote the identification and development of ecosystem approaches compatible with the sustainable use of marine and coastal living resources.	▪ No known initiative.
		(d) To promote the identification both of components of the ecosystems which are critical to the functioning of the ecosystem and of key threats.	▪ No known initiative
		(e) To promote capacity-building at local, national and regional levels, including local and traditional knowledge.	
		(f) To carry out a study on the effects of fish and invertebrate stock enhancement on marine and coastal biological diversity at the species and genetic levels.	▪ A number of workshops were conducted aimed at capacity building and institutional strengthening for biodiversity management.
		(g) To implement the 1995 Code of Conduct for Responsible Fisheries taking note of the relevant FAO international plans of action and technical guidelines.	▪ No known initiative.
		(h) To eliminate destructive fishing practices, and restore and maintain fisheries stocks to sustainable levels by the year 2015, including through financial assistance to developing countries, in	▪ Draft Fisheries Management Plan Developed.

Goal	Operational Objective	Activities	Guyana's Progress
		particular small island developing States, for improved enforcement, surveillance and patrolling and recognizing the importance of use of sustainable fishing practices, including traditional fishing practices. *(i) To maintain the productivity and biodiversity of important and vulnerable marine and coastal areas, including areas within and beyond national jurisdiction.* *(j) To promote, in collaboration with the Global Taxonomy Initiative, the strengthening of taxonomic expertise at regional and national levels.*	▪ Draft Fisheries Management Plan developed that addresses some issues. ▪ No known initiative. ▪ No known initiative.
	To make available to the Parties information on marine genetic resources in marine areas beyond national jurisdiction and, as appropriate, on coastal and marine genetic resources under national jurisdiction from publicly available information sources.	*(a) To compile and synthesize information on the methods for the identification, assessment and monitoring of genetic resources of the seabed and ocean floor and subsoil thereof, beyond the limits of national jurisdiction, and information on their status and trends including identification of threats to such genetic resources and the technical options for their protection and report on the progress made to SBSTTA.* *(b) To identify activities and processes under national jurisdiction or control which may have significant adverse impact on deep seabed ecosystems and species beyond the limits of national jurisdiction, in order to address Article 3 of the Convention on Biological Diversity.*	▪ No known initiative. ▪ No known initiative.

Goal	Operational Objective	Activities	Guyana's Progress
	To gather and assimilate information on, build capacity to mitigate the effects of, and to promote policy development, implementation strategies and actions to address: (i) the biological and socio-economic consequences of physical degradation and destruction of key marine and coastal habitats including mangrove ecosystems, tropical and cold-water coral-reef ecosystems, seamount ecosystems and seagrass ecosystems including identification and promotion of management practices, methodologies and policies to reduce and mitigate impacts upon marine and coastal biological diversity and to restore mangrove forests and rehabilitate damaged coral reef; and in particular (ii) the impacts of mangrove forest destruction, coral bleaching and related mortality on coral-reef ecosystems and the human communities which depend upon coral-reef services, including through financial and technical assistance.	*(a) Activities on coral bleaching and physical degradation and destruction of coral reefs as adopted in decision VI/3 and as amended in decision VII/5 are contained in appendices 1 and 2 below.*	▪ No known initiatives. Guyana does not have corals or coral reefs.
	To enhance the conservation and sustainable use of biological diversity of marine living resources in areas beyond the limits of national jurisdiction	*(a) Activities on coral bleaching and physical degradation and destruction of coral reefs as adopted in decision VI/3 and as amended in decision VII/5 are contained in appendices 1 and 2 below.* *Other activities relevant to non-coral ecosystems will be developed by Parties and, where appropriate, by regional organizations.*	▪ No known initiatives. Guyana does not have corals or coral reefs.

Goal	Operational Objective	Activities	Guyana's Progress
Programme Element **MARINE AND COASTAL PROTECTED AREAS**			
THE ESTABLISHMENT AND MAINTENANCE OF MARINE AND COASTAL PROTECTED AREAS THAT ARE EFFECTIVELY MANAGED, ECOLOGICALLY BASED AND CONTRIBUTE TO A GLOBAL NETWORK [13]/ OF MARINE AND COASTAL PROTECTED AREAS, BUILDING UPON NATIONAL AND REGIONAL SYSTEMS, INCLUDING A RANGE OF LEVELS OF PROTECTION, WHERE HUMAN ACTIVITIES ARE MANAGED, PARTICULARLY THROUGH NATIONAL	**To establish and strengthen national and regional systems of marine and coastal protected areas integrated into a global network and as a contribution to globally agreed goals.**	*(a) To establish effective marine and coastal biodiversity management frameworks as set out in appendix 3 below, which would comprise sustainable management practices and actions to protect biodiversity over the wider marine and coastal environment, including integrated networks of marine and coastal protected areas consisting of:* *(i) Marine and coastal protected areas, where threats are managed for the purpose of biodiversity conservation and/or sustainable use and where extractive uses may be allowed; and* *(ii) Representative marine and coastal protected areas where extractive uses are excluded, and other significant human pressures are removed or minimized, to enable the integrity, structure and functioning of ecosystems to be maintained or recovered.* *In establishing these frameworks, the appropriate balance between categories (i) and (ii) above would be selected by the country concerned.*	▪ No known initiative. ▪ No known initiative. ▪ No known initiative. ▪ No known initiative.
	To enhance the conservation and sustainable use of biological diversity in marine areas beyond the limits of national jurisdiction.	*(a) To support any work of the United Nations General Assembly in identifying appropriate mechanisms for the future establishment and effective management of marine protected areas beyond national jurisdiction.*	▪ No known initiative.
	To achieve effective management of existing marine and coastal protected areas.	*(a) To achieve effective management of marine and coastal protected areas through good governance, clear legal or customary frameworks to prevent damaging activities, effective compliance*	▪ No known initiative.

Goal	Operational Objective	Activities	Guyana's Progress
LEGISLATION, REGIONAL PROGRAMMES AND POLICIES, TRADITIONAL AND CULTURAL PRACTICES AND INTERNATIONAL AGREEMENTS, TO MAINTAIN THE STRUCTURE AND FUNCTIONING OF THE FULL RANGE OF MARINE AND COASTAL ECOSYSTEMS, IN ORDER TO PROVIDE BENEFITS TO BOTH PRESENT AND FUTURE GENERATIONS.		*and enforcement, ability to control external activities that affect the marine and coastal protected area, strategic planning, capacity building and sustainable financing.* *(b) To address, through appropriate integrated marine and coastal management approaches, all threats, including those arising from the land (e.g. water quality, sedimentation) and shipping/transport, in order to maximize the effectiveness of marine and coastal protected areas and networks in achieving their marine and coastal biodiversity objectives taking into account possible effects of climate change such as rising sea levels.* *(c) To facilitate relevant stakeholder and indigenous and local community participation as an essential component of implementing operational objective 3.3.*	▪ No known initiative. ▪ No known initiative
	To provide support for and facilitate monitoring of national and regional systems of marine and coastal protected areas.	*(a) To provide active financial, technical and other support for the establishment of a global system of marine and coastal protected area networks and the implementation within it of relevant provisions contained in this operational objective, including identification and removal of barriers to the creation of marine and coastal protected areas, and removal of perverse incentives for unsustainable activities in the marine and coastal environment, pursuant to decision VI/15, on incentive measures, within the framework of relevant marine-related international law.* *(b) To provide and maintain, in collaboration with the World Conservation Monitoring Centre of the United Nations Environment Programme, in collaboration with relevant organizations and authorities, up-to-date information on marine and coastal*	▪ No known initiative. ▪ No known initiative.

Goal	Operational Objective	Activities	Guyana's Progress
		protected areas in order to provide a basis for assessment of progress made in implementing the operational objective. *(c) Promote transfer of appropriate technology and closely collaborate with regional initiatives to fund activities, such as monitoring, geared towards conservation and sustainable use of marine and coastal biological diversity.*	▪ No known initiative.
	To facilitate research and monitoring activities that reflect identified global knowledge gaps and priority information needs of management of marine and coastal protected areas.	*(a) To collaborate with relevant organizations in the preparation of project proposals to facilitate the implementation of the research and monitoring priorities outlined in appendix 4 below.* *(b) To identify and implement an appropriate mechanism for developing advice related to network design and ecological coherence of networks.* *(c) Using the clearing-house mechanism, to assist the exchange of information on research, management issues and problems (including incentive measures) between marine protected area managers, to facilitate continuous improvement in management effectiveness across the global network [14]/ of marine protected areas.*	▪ No known initiative. ▪ No known initiative
<u>Programme Element</u> **MARICULTURE**			
TO PREVENT OR MINIMIZE THE NEGATIVE IMPACTS OF	**To promote use of techniques, which minimize adverse impact of mariculture on marine and coastal biological diversity.**	*(a) To adopt the use of relevant methods, techniques and practices for avoiding the adverse effects of mariculture on marine and coastal biological diversity, and to incorporate them into national biodiversity strategies and action plans as*	▪ Draft Fisheries Management Plan developed that addresses some of these issues although not in a very direct manner.

Goal	Operational Objective	Activities	Guyana's Progress
MARICULTURE ON MARINE AND COASTAL BIODIVERSITY AND TO ENHANCE ANY POSITIVE EFFECTS OF MARICULTURE USING NATIVE SPECIES.		*appropriate, including:* *(i) The application of environmental impact assessments, or similar assessment and monitoring procedures, for mariculture developments, with due consideration paid to the scale and nature of the operation, as well as carrying capacities of the ecosystem, taking into account the guidelines on the integration of biodiversity considerations in environmental impact assessment legislation and/or processes and in strategic impact assessment, endorsed by the Conference of the Parties in its decision VI/7 A, as well as the recommendations endorsed in decision VI/10, Annex II, on the conduct of cultural, environmental and social impact assessments regarding developments proposed to take place on, or which are likely to impact on, sacred sites and on lands and waters traditionally occupied or used by indigenous and local communities. There is a need to address the likely immediate, intermediate and long-term impacts on all levels of biodiversity;* *(ii) Development of effective site-selection methods, in the framework of integrated marine and coastal area management, taking into account the special needs and difficulties encountered by stakeholders in developing countries;* *(iii) Development of effective methods for effluent and waste control;* *(iv) Development of appropriate genetic resource management plans at the hatchery level and in the breeding areas, including cryo-preservation techniques, aimed at biodiversity conservation;* *(v) Development of controlled low-cost hatchery and genetically sound reproduction methods, made available for widespread use, in order to avoid seed collection from nature, where*	▪ Environmental Impact Assessments (EIA) are mandatory for all development projects. ▪ Environmental Impact assessments are mandatory for all development projects. Alternatives must be considered in the EIA process. ▪ Environmental Impact assessments are mandatory for all development projects. Waste management must be considered in the EIA process. ▪ No known initiative. ▪ No known initiative. ▪ New Draft Fisheries Management Plan developed.

Goal	Operational Objective	Activities	Guyana's Progress
		appropriate. In cases where seed collection from nature cannot be avoided, environmentally sound practices for spat collecting operations should be employed;	▪ No known initiative.
		(vi) Use of selective fishing gear in order to avoid or minimize by-catch in cases where seed are collected from nature;	▪ No known initiative.
		(vii) Use of native species and subspecies in mariculture;	▪ No known initiative.
		(viii)Implementation of effective measures to prevent the inadvertent release of mariculture species and fertile polyploids, including, in the framework of the Cartagena Protocol on Biosafety, living modified organisms (LMOs);	▪ No known initiative. ▪ No known initiative.
		(ix) Use of proper methods of breeding and proper places of releasing in order to protect genetic diversity;	▪ New Draft Fishery Management Plan developed which addresses some of these issues. TEDs are mandatory in fishing vessels especially with respect to trawlers to prevent harm and injury to marine turtles.
		(x) Minimizing the use of antibiotics through better husbandry techniques;	
		(xi) Ensure that fish stocks used for fish meal and fish oil are managed in such a way as to be sustainable and to maintain the trophic web;	▪ No known initiative.
		(xii) Use selective methods in industrial fisheries to avoid or minimize by-catch;	▪ No known initiative.
		(xiii) Considering traditional knowledge, where applicable as a source to develop sustainable mariculture techniques.	
		(b) To adopt best-management practices and legal and institutional arrangements for sustainable mariculture, taking into account the special needs and difficulties encountered by stakeholders in developing countries, in particular through implementing Article 9 of Code of Conduct on Responsible Fisheries, as well as other provisions in the Code dealing with aquaculture, recognizing that it provides necessary guidance to develop	▪ No known initiative ▪ No known initiative ▪ No known initiative

Goal	Operational Objective	Activities	Guyana's Progress
		legislative and policy frameworks at the national, regional and international levels. *(c) To undertake a comprehensive review of relevant documents on best practices relevant to mariculture, and to disseminate the results, as well as relevant case-studies, through the clearing-house mechanism prior to the tenth meeting of SBSTTA.* *(d) To facilitate the implementation of the research and monitoring priorities outlined in appendix 5 below in collaboration with FAO and other relevant organizations.* *(d) To undertake regional and international collaboration to address transboundary impacts of mariculture on biodiversity, such as the spread of disease and invasive alien species.*	
<u>Programme Element</u> **INVASIVE ALIEN SPECIES**			
TO PREVENT THE INTRODUCTION OF INVASIVE ALIEN SPECIES INTO THE MARINE AND COASTAL ENVIRONMENT, AND TO ERADICATE TO THE EXTENT POSSIBLE THOSE INVASIVE ALIEN	**To achieve better understanding of the pathways and the causes of the introduction of alien species and the impact of such introductions on biological diversity.**	*(a) To analyse and disseminate information, data and case-studies on the subject.* *(b) To develop collaboration with relevant organizations.* *(c) To ensure exchange of information and experience, using appropriate mechanisms.*	▪ No known initiative. ▪ No known initiative. ▪ No known initiative
	To put in place mechanisms to control all pathways, including shipping, trade and mariculture, for potential invasive alien species in the marine and coastal environment.	*(a) To invite relevant organizations such the International Maritime Organization (IMO), the Global Invasive Species Programme (GISP), the Food and Agriculture Organization of the United Nations (FAO), and the Ramsar Convention on Wetlands to work together to develop an international cooperative initiative to address impediments to the*	▪ No known initiative.

Goal	Operational Objective	Activities	Guyana's Progress
SPECIES THAT HAVE ALREADY BEEN INTRODUCED.		*management of marine alien species, particularly to address technical problems related to the identification and control of marine invasions.* *(b) To implement measures to address invasive alien species in ballast water, including through the International Convention for the Control and Management of Ships' Ballast Water and Sediments* *(c) To exchange information and facilitate technical cooperation on effective techniques for prevention, early detection, eradication and control of invasive alien species in the marine and coastal environments.* *(d) To develop close collaboration between national agencies responsible for development of controls on pathways for entry of alien species and national input into the work of the International Plant Protection Convention (IPPC), the Organization internationale des epizooties (OIE), IMO and other relevant international agreements.* *(e) To identify means to support capacity-building in developing countries to strengthen their ability to conduct work related to alien species.* *(f) To promote international cooperation by inviting relevant organizations and donor agencies to collaborate in the assessment of the effects of invasive alien species, and in the elaboration of strategies for their control.*	▪ No known initiative. ▪ No known initiative. ▪ No known initiative. ▪ No known initiative. ▪ No known initiative.

Goal	Operational Objective	Activities	Guyana's Progress
	To maintain an incident list on introductions of alien species.	*To continue making updated information on introductions of alien species available through the clearing-house mechanism or other appropriate mechanisms.*	▪ No known initiative.
Programme Element **GENERAL**			
	To assemble a database of initiatives on programme elements through a cooperative approach with relevant organizations and bodies, with special emphasis on integrated marine and coastal areas management.	*(a) To identify sources of relevant information and to make this readily available.* *(b) To request inputs from Parties, countries and relevant organizations and bodies.* *(c) To carry out desk evaluations with the assistance of the roster of experts of available information and to disseminate the findings through the clearing-house mechanism.*	▪ No known initiative. ▪ No known initiative. ▪ No known initiative.
	To undertake effective collaboration, cooperation and harmonization of initiatives with relevant conventions, organizations and agencies while recognising their independent mandates.	*(a) To identify and implement meaningful joint activities and initiatives with relevant conventions, organizations and agencies aimed at the implementation of this work programme.* *(b) To collaborate with regional seas conventions and action plans, including identification of joint programmes of work on topics of mutual relevance, including through regionally elaborated criteria for the establishment and management of marine and coastal protected areas under regional seas conventions and action plans.*	▪ No known initiative. ▪ No known initiative.

ANNEX II-D. GUYANA'S PROGRESS ON THE UNCBD INLAND WATERS BIODIVERSITY WORK PROGRAMME.

Programme Element	Goal	Operational Objectives	Guyana's Progress
CONSERVATION, SUSTAINABLE USE AND BENEFIT-SHARING.	**To integrate the conservation and sustainable use of biological diversity into all relevant sectors of water-resource and river-basin management, taking into account the ecosystem approach.**	*(a) Adopt integrated land and catchment/watershed/river basin management approaches that incorporate the ecosystem approach, and the conservation and sustainable use of inland water ecosystems, including transboundary catchments, watersheds and river basins.*	▪ Sustainable Management of the Rupununi; Linking Biodiversity, Environment and People.. ▪ Project funded by Darwin Initiative focus on and people-centred ecosystem approach to management of the wetlands of the North Rupununi. ▪ North Rupununi Adaptive Management Plan. ▪ Assessing impacts and building capacity is currently being undertaken to implement the management plan and build the necessary capacity to support it.
		(b) Encourage the adoption of such integrated watershed, catchment and river basin management strategies to maintain, restore or improve the quality and supply of inland water resources and the economic, social, cultural, spiritual, hydrological, biological diversity and other functions and values of inland water ecosystems.	▪ Formation of the Guyana/Suriname Tropical Wilderness Corridor being considered.
		(c) Integrate into land-and water-use management approaches appropriate adaptive management and mitigation responses to combat, and prevent where possible, the negative impacts of climate change, El Niño, unsustainable land use and desertification on the biodiversity of inland water ecosystems.	▪ Formation of a Climate Change Committee.
	To establish and maintain comprehensive, adequate and representative systems of protected inland water ecosystems within the framework of integrated catchment/watershed/river basin management	*(a) Comprehensive, adequate and representative systems of protected inland water ecosystems (including all IUCN protected area categories, as appropriate) are developed and maintained within the framework of integrated catchment/watershed/river basin management.* *(b) Where appropriate, transboundary, collaborative approaches to identifying,*	▪ Policy support to NRWL as Ramsar site. ▪ Support to monitoring of Arapaima in Rupununi River

Programme Element	Goal	Operational Objectives	Guyana's Progress
		recognizing and managing protected inland water ecosystems are undertaken between neighbouring Parties.	▪ Biodiversity Corridor for the Guianas being considered.
	To enhance the conservation status of inland water biological diversity through rehabilitation and restoration of degraded ecosystems and the recovery of threatened species.	*(a) Degraded inland water ecosystems are rehabilitated or restored, where appropriate and possible.* *(b) The conservation status of threatened species reliant on inland water ecosystems is improved.*	▪ Management of the Arapaima.
	To prevent the introduction of invasive alien species, including exotic stocks that potentially threaten the biological diversity of inland water ecosystems, and to control and, where possible, eradicate established invasive species in these ecosystems.	*Through national biodiversity strategies and action plans and other relevant national and regional policies, programmes and plans undertake appropriate actions to prevent invasive alien species, which threaten the biological diversity of inland water ecosystems, from spreading and either control or eradicate them where invasion has already taken place.*	▪ There is an approval procedure for introducing species. ▪ Aquaculture Bill drafted.
INSTITUTIONAL AND SOCIO-ECONOMIC ENABLING ENVIRONMENT.	**To promote the integration of conservation and sustainable use of the biological diversity of inland water ecosystems into relevant sectoral and cross-sectoral plans, programmes, policies and legislation.**	*(a) Relevant sectoral plans, programmes, policies and legislation are compatible with, and where appropriate supportive of, plans, policies, programmes and laws for the conservation and sustainable use of the biological diversity of inland waters.* *(b) Strategic environmental assessments are operating to ensure national institutional arrangements (plans, programmes, policies and legislations) are supporting the implementation of this programme of work.* *(c) The national implementation of relevant multilateral environment agreements that relate to inland water biodiversity and ecosystems is taking place in an integrated,*	▪ Preparatory work on establishing NPAS. ▪ EPA has system in place.

Programme Element	Goal	Operational Objectives	Guyana's Progress
		efficient and effective way.	▪ Wide sensitization.
	To encourage the development, application and transfer of low-cost appropriate technology, non-structural and innovative approaches to water resource management and the conservation and sustainable use of the biological diversity of inland water ecosystems, taking into account any decision taken by the Conference of the Parties at its seventh meeting on technology transfer and cooperation.	*(a) Promote the development, documentation and transfer of appropriate technologies and approaches to water-resource management and the conservation and sustainable use of the biological diversity of inland water ecosystems.* *(b) Apply, as appropriate, the technologies and approaches identified and made available in response to the above objective.*	▪ NMFS – WW2BW Initiative: Watershed Management in the Upper Essequibo River. ▪ Proposed ACTO 2004-2012 project.
	To provide the appropriate incentives and valuation measures to support the conservation and sustainable use of inland water biological diversity, and to remove, or reform appropriately, any perverse incentives opposing such conservation and sustainable use of ecosystems, as it relates to biodiversity conservation.	*(a) Apply for inland water biological diversity the proposals for the design and implementation of incentive measures (as endorsed through decision VI/15 of the Conference of the Parties to the Convention on Biological Diversity and contained in Annex I of that decision).* *(b) Encourage valuation of the full range of goods and services provided by inland water biological diversity and ecosystems in development proposals and with respect to applying incentive measures, and the identification and removal or modification of perverse incentives.*	▪ VCIF for ARC Committees. (Darwin initiative project supports this).
	To implement the programme of work for the Global Initiative on Communication, Education and Public Awareness (as adopted by the Conference of the Parties to the Convention on Biological Diversity in its decision VI/19), giving particular attention to matters relating to the conservation and sustainable use of the biological diversity of inland water ecosystems.	*(a) Comprehensive and well-targeted national programmes for communication, education and public awareness for the conservation and sustainable use of the biological diversity of inland water ecosystems are put in place and operate effectively.* *(b) Key national, catchment/river basin and local-level decision makers and stakeholders are identified and appropriate communication mechanisms are established between them.*	▪ Being developed. ▪ Started, e.g. NRDDB.
	Promote the effective participation of indigenous and local communities and relevant stakeholders in the conservation and sustainable use of	*Relevant national stakeholders, including representatives of indigenous and local communities, are involved, as far as appropriate, in the policy-making and in the*	

Programme Element	Goal	Operational Objectives	Guyana's Progress
	biological diversity of inland water ecosystems in accordance with national laws and applicable international obligations.	*planning, implementation and monitoring of the implementation of the programme of work.*	
KNOWLEDGE, ASSESSMENT AND MONITORING.	**To develop an improved understanding of the biodiversity found in inland water ecosystems, how these systems function, their ecosystem goods and services and the values they can provide.**	*(a) Develop an improved picture of the status and trends of the biological diversity of inland waters, its uses, taxonomy and threats and ensure adequate dissemination of this information.* *(b) Establish, maintain and further develop expertise in inland water biological diversity and ecosystems.*	▪ Archaeological survey in the Upper Essequibo. ▪ Fish species inventory by Iwokrama in the Rupununi Area. ▪ Fish species inventory in the South Rupununi.
	To develop, based on inventories, rapid and other assessments applied at the regional, national and local levels, an improved understanding of threats to inland water ecosystems and responses of different types of inland water ecosystems to these threats.	*(a) Assessments and inventories of inland water biodiversity undertaken, including the urgent identification of stressed inland water ecosystems and those mentioned in Annex I of the Convention.* *(b) Rapid assessments, using suitable indicators, being undertaken for inland water biodiversity, in particular in small island developing States and States where inland water ecosystems suffer from ecological disasters and urgent provision of support to develop and implement national strategies for the prevention and mitigation of ecological disasters in inland water ecosystem types.*	▪ Much resource has focused on mining and mercury. ▪ Monitoring of mercury levels in various levels.

Programme Element	Goal	Operational Objectives	Guyana's Progress
		(c) Build national capacity for undertaking the above-mentioned assessments through appropriate mechanisms.	
	To ensure projects and actions with the potential to impact negatively on the biological diversity of inland water ecosystems are subjected, in accordance with national legislation and where appropriate, to suitably rigorous impact assessments, including consideration of their potential impact on sacred sites and on lands and waters traditionally occupied or used by indigenous and local communities.	*(a) Undertake environmental impact assessments, in accordance with national legislation and where appropriate, for all projects with the potential to impact on the biological diversity of inland water ecosystems, ensuring that these take into account the "inter-related socio-economic, cultural and human-health impacts, both beneficial and adverse".* *(b) Conduct cultural, environmental, and socio-economic impact assessments, in accordance with national legislation and where appropriate, regarding developments proposed to take place on, or which are likely to impact on, sacred sites and on lands and waters traditionally occupied or used by indigenous and local communities, in accordance with section VII/16 (Akwé: Kon Voluntary Guidelines for the Conduct of Cultural, environmental and Social Impact Assessment Regarding Developments Proposed to Take place on, or which are Likely to Impact on, Sacred Sites and on Lands and Waters Traditionally Occupied or Used by Indigenous and Local Communities).*	▪ EPA permitting addresses this issue.
	To introduce and maintain appropriate monitoring arrangements to detect changes in the status and trends of inland water biodiversity.	*Establish and maintain national monitoring programmes for the components of inland water biodiversity, paying particular attention to those requiring urgent conservation measures and those which offer the greatest potential for sustainable use.*	▪ Not implemented; water quality monitoring programme planned for Upper Essequibo.